E NATIONAL METALWORKING WEEKLY September 18, 1952

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BIG FACTOR in every

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and the Products It Builds

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BALL BEARINGS

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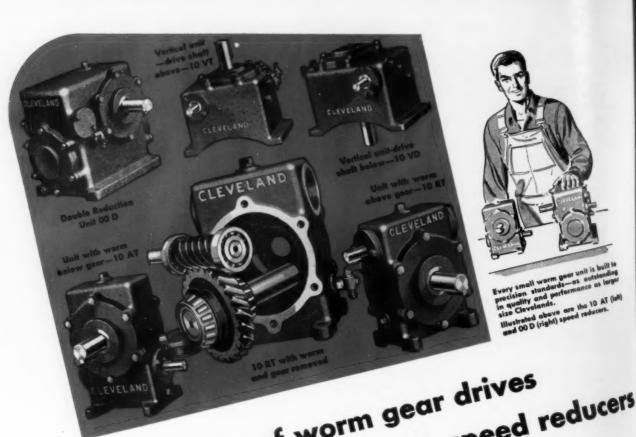
ball bearings—top service in ball bearing application. That's hy New Departures are such a tremendous factor in every hase of modern industry—reducing costs as they reduce friction.

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Enjoy the benefits of worm gear drives in smaller CLEVELAND speed reducers

When you want a quiet, powerful, dependable a Cleveland drive for a small machine, choose a Cleveland worm Gear Speed Reducer. As built by Cleveland, the worm gear reducer is a Worm Gear Speed Reducer.

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1. It is compact and inherently quiet, transmitting

1. To be proved to the property of the provider with smooth and provided to the It is compact and innerently quiet, transmiting power with smooth, uninterrupted torque flow. drive of many advantages:

- 2. Its right-angled design saves valuable space.
- 3. It has a minimum of moving parts.
- 2. It has a minimum of moving parts.
 4. Shock load resistance and other factors of safety
- 5. Rate of wear of case hardened steel worm on Rate of wear of case nardened steel worm on nickel-bronze gear is very low, insuring long life. Write for Bulletin 114F which illustrates and gives engineering data on smaller size Clevelands—many now engineering data on smaller size Clevelands—many now available for immediate delivery. The Cleveland &. O. available for immediate delivery. The Cleveland worm and Gear Company, 3252 E. 80th St., Cleveland 4, O. Affiliate: The Farval Corporation, Centralized Systems of Lubrication In Canada, Descock Rusthers Limited. Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.



HOW BOLTED STRUCTURAL JOINTS ED UP STEEL CONSTRUCTION



Lebanon, Pa., Plant in a range of sizes so wide as to meet virtually every construction requirement.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Bethlehem supplies every type of Fastener

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the Iron Age—DIGEST

Vol. 170, No. 11 September 18, 1952

CONTENTS * Starred items are digested on opposite page. EDITORIAL The Younger Generation NEWS OF INDUSTRY *Special Report: Power Expansion Shorted..... 95 Manufacturing: Boom Cranes Aid the Ladies... 96 Instruments Keep Pace 97 ★Fuel: Canada Pipeline Snakes Ahead...... 98 *Raw Materials: Outlook on Lead, Zinc 102 Controls: Cans—Quotas, Prices Up 107 Personnel: Iron Age Salutes 147 Clearing House 226 NEWS ANALYSIS Newsfront 93 Canadian Comment 114 ★Washington News: Defense Spending...... 123 TECHNICAL ARTICLES *Plastic Prototypes Speed New Products..... 155 Grinding Wheels Boost Cylinder Sleeve Output 159 *Forging Dies Finished By Wet Blasting...... 160 Carbide Tool Cuts Cost For Hardened Studs. . 163 **★**Dual Purpose Fixtures Hold Down Tooling Cost 164 *Impregnation Improves Casting Quality, Life.. 166 *Electrolytic Manganese Acceptance Grows 168 MARKETS & PRICES *The Iron Age Summary-Steel Outlook..... 195 Iron and Steel Scrap Prices 204 Comparison of Prices 206 Steel Prices 208 REGULAR DEPARTMENTS Dear Editor Fatigue Cracks II Conventions and Meetings 13 Free Publications 129 New Books . Technical Briefs . INDEX OF ADVERTISER \$..... 240

THE IRON AGE, published every Thursday by the CHILTON CO. (INC). Chestnut & 58th Sts., Philadelphia 39, Pa. Entered as second class matter, New. \$, 1932, at the Post Office at Philadelphia under the set of March 3, 1872. \$5 yearly in United States, its territories and Canada; other Western Hemisphere Countries, \$15; other Foreign Countries, \$25 per year. Single copies, 35c. Annual Review and Metal Industry Facts Issue, \$2.90. Cables: "Ironage," N.T.

NEWS DEVELOPMENTS

POWER EXPANSION PROGRAM FALLING SHORT—P. 95 Electric power expansion program has hit a snag and could miss the 84.7 million kw goal by 1.5 million kw. Industry is unable to say whether power shortages will develop. Main bottleneck is delay in obtaining equipment and materials. Steel losses could aggravate the problem though no effect feit vet.

CANADA PUSHES HARD ON OIL PIPELINE LINK—P. 98
The drive is on to lay Canada's crude oil pipeline link between
Alberta oilfields and the Pacific Northwest. The line will have
an important economic effect on the area. Across 711 miles of
rugged mountains 1500 men are welding pipe at the rate of 3
miles a day. About 148,000 tons of pipe will be used.

STEEL INDUSTRY HOPING FOR LABOR PEACE—P. 101
Can new wage contracts in coal and refractories industries be signed without strikes? Steel people certainly hope so. They are vulnerable to long stoppage in either industry. Steel production losses due to strikes total nearly 50 million tons since last war. Only four countries make more than we lose.

FORGING SHOPS PLAY WAR'S ANVIL CHORUS—P. 103
Thunderclaps of forging hammers are more violent today in answer to the latest summons of war. The 6 million ton capacity of the industry is seen as adequate to meet any defense need. Even Air Force heavy press program forgings can be made on time. NPA's 30-day inventory order won't work with forgers.

EUROPE'S STEEL GROWTH—WISE OR FOLLY?—P. 113
Some European industrialists view planned expansion, modernization of their home steel industries with MSA cash aid as folly. They say a steel surplus is growing up and no new markets are in sight. Yet, MSA told The Iron Age that it will put most of the emphasis on finishing, not crude steel output.

TAFT-HARTLEY LABOR LAW TO STAY ON BOOKS—P. 121
The Taft-Hartley labor law is here to stay no matter what promises are flung about carelessly by political candidates. Congress won't be in any mood to make any but minor changes in the law. These even its creator favors. Gov. Stevenson's attack on blocking strikes offers no substitute measure.

of the WEEK in metalworking

ENGINEERING & PRODUCTION

MARKETS & PRICES

ENGINEERING AIDS SPEED PRODUCT OUTPUT—P. 155
Getting new designs into production becomes more difficult
and costly each year. Production problems become harder to
visualize in advance. Plastic prototypes, rapidly made from
inexpensive wooden models and three dimensional perspective
drawings cut costs and make visualization easier.

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WET BLASTING CUTS DIE MAINTENANCE — P. 160
Directional lines and grinding wheel snags—long a probem
in finishing forging dies—are efficiently removed by wet
blasting. Tolerance, sharp corners and lines are not affected.
The abrasive gets into areas inaccessible by hand, produces
an easy-releasing matte finish.

CANADA SEEKS MORE U. S. DEFENSE MONEY—P. 114
Canadian industrialists and Defence Production Dept. authorlties start drive to obtain a larger slice of U. S. defense
spending. Plan is to divert the business to small industries.
Meanwhile, Canada's rapidly rising steel production may pass
iron and steel scrap supplies in months ahead.

DUAL PURPOSE FIXTURES CUT TOOL COSTS—P. 164
Fifty seven different machining operations are required to produce a guided missile support rotor whose largest dimension is
a 1.375 in. diameter. Limited production quantities made it
necessary to keep tooling costs to a minimum. Of 32 fixtures
required, many were designed to serve more than one operation.

STAMPING RATE IMPROVES AFTER POOR YEAR—P. 116
A rush of fall orders is keeping metal stamping companies going full tilt after a tough year. Metals shortages, controls on civilian goods and the steel strike had been dogging them all along. Defense orders didn't compensate for lost orders. Now steel users are pushing to use up '52 output quotas.

IMPREGNATION IMPROVES CASTING QUALITY—P. 166
Casting users find casting impregnation improves both the quality and service life of parts. Impregnation by modern vacuum-pressure methods provides an effective method of sealing microporosity and casting voids. Sealant is a mixture of metallic flour in sodium silicate.

HAS DEFENSE SPENDING REACHED ITS PEAK?—P. 123 Washington planners have locked horns on whether defense spending has reached its peak. Stretch-out of the program put the peak date at mid-1952—that's now. Henry Fowler, Mobilization Chief, says the defense job is but one-half completed. An economic adviser maintains the top's been already hit.

ELECTROLYTIC MANGANESE GAINS FAVOR—P. 168
More and more metal producers are using electrolytic manganese. Over 40 million lb has reached the market since 1940. It has found favor as a nickel substitute and opened a new field of manganese alloys. Freedom from carbon and other elements is of special advantage in steel production.

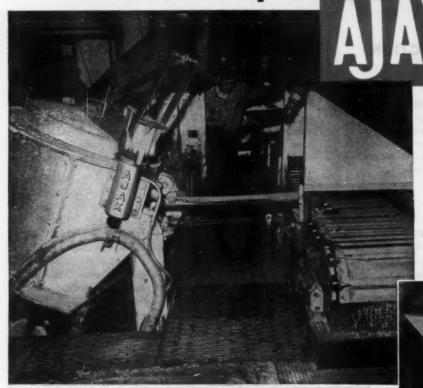
First quarter steel quotas for civilian goods manufacturers are expected to be set at 60 pct of third quarter quotas. But most people are taking this with a grain of salt. This would mean doubling defense requirements, which are expected to go down, not up. Military users now aren't taking all set-asides.

NEXT WEEK—WEIRTON STEEL GUARDS AGAINST FIRE Extensive use of built-in fire fighting system is teamed with portable extinguishers and two fire departments to keep fire damage and down time at a minimum. Special classes train 300 men a year in use of fire extinguishers. Daily equipment inspections and special welding precautions are part of the program.

GRANT HIGHER PRICE TO ONE COPPER FIRM—P. 198
Calumet & Hecla allowed boost to 27.50¢ per lb for Lake copper. Increase permitted by OPS under Capehart Amendment—others may be on the way. Market now confused by triple price set-up. Zinc up 1/2¢ to 14.50¢ per lb (Prime Western) f.o.b. East St. Louis. Alcoa opens smelter at Wenatches, Wash.

MILLIONS of POUNDS

of Aluminum per year reclaimed with the help of



MAJOR AUTO MANUFACTURER RECOVERS SCRAP FROM MACHINING **OPERATION BY MODERN MELTING PROCESS**

166 kW AJAX Induction Furnace in tilted position, pouring molten aluminum alloy through a coated trough into ingot molds on conveyor.

Here is an interesting setup for reclaiming aluminum alloy chips, which is installed adjacent to the piston casting setup in one of the largest automobile manufacturing plants in the country. More than half of the aluminum needed for pistons in this plant comes from this scrap recovery program. A considerable net profit is realized, and aluminum purchases are lowered.



Above is a 330 kW furnace. AJAX Engineering Corporation manufactures low frequency electric induction furnaces in a great variety of sizes ranging from 20 to 1000 kW. This type of equipment has been adapted to the full range of non-ferrous metals and alloys.

Send for Reprint of Article on Scrap Recovery by Induction Furnaces



AJAX ELECTRO METALLURGICAL CORP., and Associated Companies
AJAX ELECTROTHERMIC CORP., Aust Rothing high frequency induction furnaces
AJAX ELECTRIC CO., INC., The Aust Midgren Electric Sell Bath furnace
AJAX ELECTRIC FURNACE CORP., Ajax Walti Induction furnaces for Meting

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FOUNDED 1858

The Younger Generation

THE preacher, the public speaker, the businessman and the columnist have more and more to say about the younger generation. The main theme? Youth isn't what it used to be-or what it ought

Many point to looseness in moral integrity and view with alarm the tendency to get too much for too little effort. Youth starting to work even wants details on pensions-how much and when.

Stories on delinquency, dope and laziness are frightening many people. Sensational escapades grab the headlines.

Maybe a good part of this pessimistic outlook seems well founded. Much of it is opinion not tested by statistical fact.

Let's assume that laziness, something-for-nothing, cynicism and a tendency to "loosely" determine right from wrong are on the upgrade with the young and slightly older than young. How come?

Speeches, lectures, harping and nagging change few of us. But a good example often has a terrific impact upon us. What have young people seen and heard in the past 20 years or so? Here are a few

"Security" talk—as if it were the beginning and end of everything.

Adults arguing for more money for less work; more leisure but unprepared to use it; higher wages but no thought of their effect upon others.

Poor and at times stupid national leadership.

Sly acceptance of the "fast buck" artists, with a "smart" and secret envy.

Pressure groups with their "holier than thou" attitude but with their hands out.

Parents welshing on their responsibilities to their children, the schools and their country.

Corruption of local, state and national governmental officials to the point where ethics is a forgotten word.

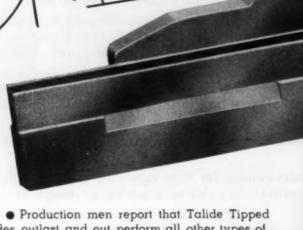
Those whose parents, employers and labor leaders have done their jobs honestly will survive these pitfalls.

A rebirth in democratic and ethical ideals by all adults is a crying need. Only then can we hope for a finer and more responsible youth. It is everyone's job—yours and mine.

Tom Campbell

Editor





Production men report that Talide Tipped Centerless Blades outlast and out perform all other types of blades—on many jobs by as much as 50 times. Over the past 10-year period more Talide Tipped Blades have been used in industry than any other hard-faced blade.

Another distinct advantage which appeals to most production men is that the strip is made in one piece—not in sections butted together. There is no line or seam to scratch or mar expensive ground and polished parts.

In addition to standard blades, you can buy form or step Talide Blades for use in grinding parts having multiple diameters, steps, tapers, contours or other special shapes. Send parts or prints for estimate.

You can obtain standard Talide Centerless Blades immediately from our warehouses in Newark, Youngstown, Detroit or Chicago. CUTTING TOOLS

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WORK ROLLS

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CUTTING TOOLS . DRAWING DIES . WEAR RESISTANT PARTS

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25 YEARS
EXPERIENCE
IN TUNGSTEN
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METALLURGY

More To It

Not that it makes a great deal of difference at this late date but simply for a matter of record, the letter from E. L. Schwatt appearing on p. 9 of your Sept. 4 issue is not quite correct relative to Henry M. Leland versus Henry Ford.

Henry M. Leland was the founder of Cadillac Motor Co. and was for several years president. I am wondering if Mr. Schwatt has not confused Henry M. Leland with his son, Wilfred Leland, who could very well have been chief engineer of Cadillac.

I do not think, under any circumstances, particularly during the latter part of their lives, that Henry M. Leland or Henry Ford could be classified as old friends. They knew each other for years and, during the period between 1904, 1915 and 1916, were collaborators and gave mutual assistance to each other. However, this relationship changed.

S. P. HULL Sales Manager

Worcester Stamped Metals Co. Worcester

Aluminum Coating

Sir:

On p. 87 of the Sept. 4 issue the following item appeared, which is of much interest to us:

"In pilot plant operations steel strip has been successfully aluminum coated by a new continuous process in which no inert atmosphere is needed. The strip is run through a molten bath of 43S aluminum. Good adherence and smooth even coatings are reported."

We would appreciate further information concerning this process.

J. M. HEIMERL Purchasing Manager

Fedders-Quigan Corp.

This process has been used by Walter M.
Pollet, 1583 Rose Villa St., Pasadena 4,
Calif.—Ed.

Good Supply

CE

I have recently returned from an extensive trip during which I talked to many engineers and designers in a wide variety of industries.

Previous to my trip I had been under the impression that engineers were aware that government restrictions limiting the uses of zinc had been removed and further that the zine supply situation is entirely adequate. To my surprise, I found that

they thought there was a continuing shortage of zinc and its use was still under control.

The American Zinc Institute has assured us that the improved production and supply situation is not tem-

C. R. MAXON

New Jersey Zinc Co. New York

Can You Help?

Sir:

Would you please forward to me the manufacturers and/or publications of equipment which may be used for typewriting letters and numbers on identification plates. Plates are made of brass and are 1/16 x 3% x 51/2 in.

Any assistance you can give me in this matter certainly will be appreciated.

D. MacRAE Methods Analyst

Fisher Body Div. General Motors Corp. Pontiac, Mich.

Sorry we do not know of such equipment, perhaps one of our readers may be able to help.—Ed.

Molybdenum Lubricants

Sir:

On p. 91 of your Feb. 8, 1951, issue there appeared an article entitled "Molybdenum Lubricants Prove Itself in Tough Test." We would like to have your permission to reproduce it for our client, Milwaukee Power Equipment Co.

C. J. DUFFY President

Duffy & Associates, Inc.

Ti Producer

Sir:

It would be most appreciated if you would send us two tear sheets of the article "Republic Steel: New Titanium Producer" which appeared in your Aug. 21 issue.

N. W. BASS Vice-President

Brush Beryllium Co. Cleveland

Double Duty

The article "New Press Pierces, Bends Boiler Parts" on p. 96 of your July 31 issue is most interesting.

Your granting us permission to reprint this would be very much appreciated.

J. R. DERRICKSON Executive Secretary

Formed Steel Tube Institute



32 Page MANUAL by the originators of "Die-less Duplicating" This instructive and authoritative booklet will quickly prove it-

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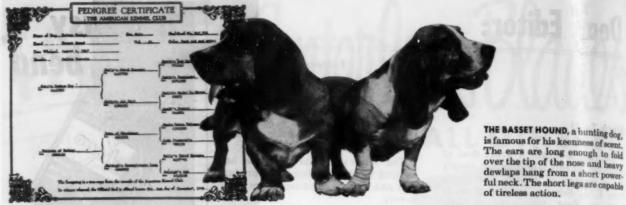
The exact methods of producing various types of bends in a wide range of materials are illustrated, step by step, with over 90 diagrams and charts together with valuable tooling suggestions.

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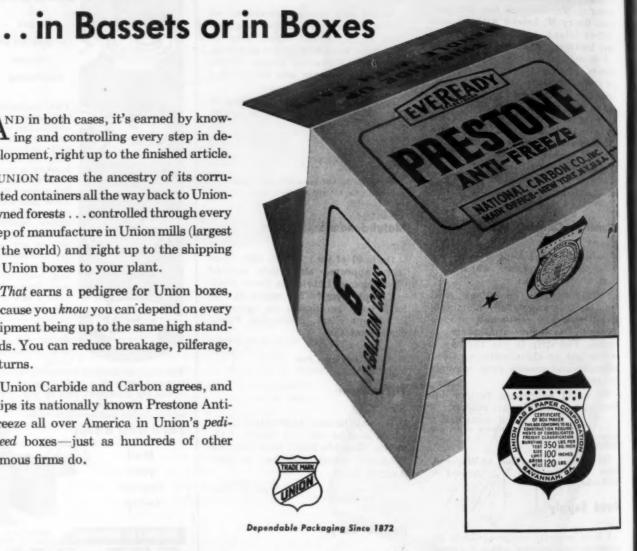
"Pedigree"is a Fancy Name for "Quality"

ND in both cases, it's earned by know-A ing and controlling every step in development, right up to the finished article.

UNION traces the ancestry of its corrugated containers all the way back to Unionowned forests . . . controlled through every step of manufacture in Union mills (largest in the world) and right up to the shipping of Union boxes to your plant.

That earns a pedigree for Union boxes, because you know you can depend on every shipment being up to the same high standards. You can reduce breakage, pilferage, returns.

Union Carbide and Carbon agrees, and ships its nationally known Prestone Anti-Freeze all over America in Union's pedigreed boxes-just as hundreds of other famous firms do.



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Fatigue Cracks

by Charles T. Post

Basement Boatbuilder

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Nothing's funnier to most people than a tale of someone else's stupidity. The perennial tale that tops them all is the one about the man who built a boat in his basement, then found it too big to get out the door.

That's why we were fascinated last week when workmen began assembling a big steel freight car in the main passenger room of Grand Central Station. The car obviously was too big to get out the door. What's more, instead of being put together on one of the score of tracks a few feet away, there it was standing in the middle of the marble floor. A sign in front of the car stated that it was the 100,000th freight car to be built for the Eastern railroads since World War II.

Haw, Eastern railroads, we smirked, wait till you try to move your 100,000th car. You'll have to take it all to pieces again.

And so, it turns out, they will. On purpose, too. The car is a special job made up of small panels so that it can be taken apart, put on another freight car for hauling to another station for reassembly and display. Then, according to our figuring, it should be counted as the 100,001st freight car, etc.

Government Economy

In case either of the Presidential candidates care to listen, George Sullivan, your f.f.j.'s managing editor, can tip him off to a few places where the federal budget can be cut without anyone feeling it.

First off, George will show him a couple of undecipherable photographs bought from the Commerce Dept.'s Office of Technical Services at \$1 per. "We can't decipher them, let alone print them," says he. "One looks like Schultz's Bakery after the fire; the other apparently is so top secret that it was photographed on a moonless night in a dark cellar under the light of a Zippo."

Then there's the matter of the magazines the government bureaus publish. We're a little tetchy about these, since they are in competition—if you can call it that—with several score business and technical magazines published for private industry. Latest off the press is a series of "Small Business Aids" from the Small Defense Plants Administration. We love small business since we're one, ourselves, But

we can't see the need for a series of monthly technical articles (for August, it's "Metallizing") on subjects which have been pretty thoroughly covered in established private magazines, many of which are distributed free by their sponsors.

And now, George points out, the Commerce Dept. refuses to be outdone. The first 130 of a series of "Production Notes" are making their appearance. They tell you about such mysterious subjects as die casting, hobbing molds, and, of all things, tin recovery from scrap metal items.

Puzzlers

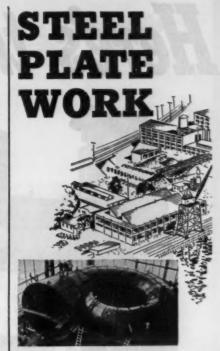
For some mysterious reason we lost the puzzle in last week's issue. Our puzzle-solving proof reader probably couldn't solve it so he left it out. We will try again this week to get it in.

The trench problem was easy digging for C. E. Norton, Chicago; C. R. Gibbs, Revere Copper and Brass, Inc.; L. D. Rice, Timken Roller Bearing Co.; D. S. Tarr, Tarreraft Co.; H. K. Moore, Eaton & Howard, Inc.; R. W. Huff, Canton, Ohio; M. P. Higgins, Sam C. Earley Corp.; L. J. Chamberlain, Western Electric Co., and G. Pascoe, Ford Motor Co.

The circular area puzzle is still pulling. Latest heard from are C. R. Skinker, New Jersey Zinc Co.; J. Roecker and L. E. Golden, Caterpillar Tractor Co.; R. R. Hensel, National Tube Co.; N. F. Jannotta, Philadelphia Toboggan Co., and R. H. Aughinbaugh, Public Service Commission of Indiana.

Two more answers to the baggage problem received from W. C. Shortle, Scott & Williams, Inc., and A. Romeo, The Denison Engr. Co. W. F. Chenoweth, National Cash Register Co., has just worked out the latest cow problem.

C. R. Simon, Michael Flynh, Inc., poses this one: Two vertical conical tanks (both inverted) have their vertices connected by a short horizontal pipe. One tank, initially full of water, has an altitude of 6 ft and a diameter of base of 7 ft. The other tank, initially empty, has an altitude of 9 ft and a diameter of base of 8 ft. If the water is allowed to flow through the connecting pipe, find the level to which the water will ultimately rise in the empty tank. Neglect the water in the pipe.



TURBINE CASINGS

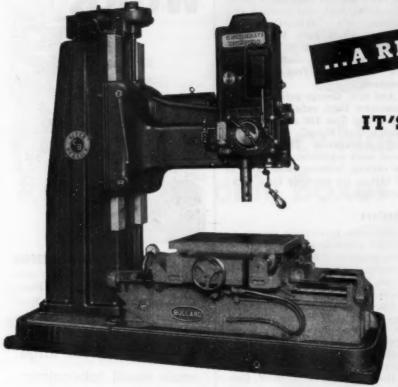
and other heavy steel plate work are fabricated at Puseyjones of Hot-Rolled, High-Strength, Low-Alloy Steel.

Every facility for large scale metal fabricating: Heavy plate shop equipment — Rolls — Shears — Bending furnaces. Stress relieving furnace 33'x18'x16' up to 2100°F. Machine shop for facing, turning, and boring. 50 ton capacity gray iron foundry. Deepwater transportation on one side, the Pennsylvania RR on the other. Talk to our development engineers.

Metals Fabrication Division THE PUSEY AND JONES CORP. 504 Front Street, Wilmington, Del. Established 1848

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Here's thrifty accuracy



.. A REAL COMBINATION

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IT'S BULLARD

... for REPRODUCED ACCURACY without a single jig

Outstanding accuracy, increased production and cost lowering can be assured by using this natural combination of the precision Cincinnati Bickford Drilling Machine and precision Bullard Spacer.

Jig expense, as well as storage and maintenance costs, are eliminated.

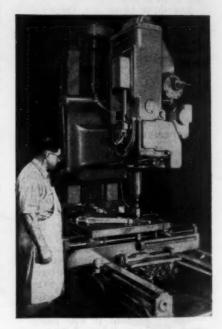
The new job can go into immediate production with interchangeable accuracy, with no lost time waiting for jigs and fixtures to be designed and built.

The wide range of speeds and feeds and the extra rigidity of the spindle and frame of this Cincinnati Bickford Precision Drilling Machine, and the convenience and ease of operator control, assure speed on the job and a wide range of use of the machine.

Actual production time is reduced as no jigs are handled by the operator.

For low cost, increased speed and great accuracy, look into this profit-making combination.

Write for Circular FH.



The Lockheed Aircraft Corporation, Burbank, California, finds the Cincinnati Bickford-Bullard combination ideal for fast, repetitive drilling on a variety of work.

PHOTO COURTESY LOCKHEED AIRCRAFT CORPORATION

CINCINNATI



RADIAL AND UPRIGHT DRILLING MACHINES

E CINCINNATI BICKFORD TOOL CO.

Cincinnati 9, Ohio U.S.A.

out

THE IRON AGE Newsfront

welding titanium alloy still presents plenty of trouble. Welds are brittle. Heat treatment may be the only solution but experimental work on this phase so far has been not too fruitful.

Particularly jittery are <u>defense contractors</u> who are already <u>getting into titanium</u> and are trying to evaluate the metal without the use of destructive testing.

Financing and administrative talent are being attracted to development of the fabulous Aquilla iron ore deposit on Mexico's West Coast. It's one of the richest deposits on the North American continent (62 pct with low phos and sulfur content) and is estimated in excess of 50 million tons.

in excess of 50 million tons.

Although the deposit has been undeveloped, two major producers almost had it in the bag 10 years ago. They lost out when they ran into trouble with the Mexican government.

Defense programs are giving automotive companies financial headaches. They've been forced to expand capital resources to cope with defense production. Heavy borrowing programs have been necessary to carry these firms through the period before defense contracts pay off.

Only a few major companies have been able to finance their programs from reserves. Others have been forced into negotiating heavy defense loans.

- Despite the huge price it had to pay for a new wage contract, the steel industry may still face trouble from labor. Newest threat is a refractory strike which could affect steel in 2 weeks. And, huge coal stocks notwithstanding, the industry will not breathe easy until John L. Lewis has signed on the dotted line.
- ► To improve tool life of its broaches and provide a better product finish, one large motor car producer is now <u>finish grinding</u> all its motor blocks after cleaning.
- Civilian industries that have been chafing under controls may be able to test real demand for their products by the second quarter of 1953. Reason: Expansion of basic materials is beginning to pay off.

1953. Reason: Expansion of basic materials is beginning to pay off.
Some makers of civilian goods are already more worried about
the inflation factor than they are about materials next year.

- Bringing home the far-flung implications of the steel strike:
 A leading paper box manufacturer reports <u>business dropped drastically</u> this summer. When metal products makers couldn't get steel and had to curtail shipments, they also <u>cut back orders for shipping</u> materials.
- New titanium alloy being offered commercially contains $l^{\frac{1}{2}}$ to $2^{\frac{1}{2}}$ pct of iron, chromium and molybdenum. This alloy is intended for both sheet and forging applications with a guaranteed maximum of 0.05 C, 0.08 N. The grade is Ti-140A made by Titanium Metals Corp. of America.
- A new vertical turning machine now in pilot operation is <u>machin</u>ing jet engine rotor disks at a rate four times greater than previcus methods. Machine is said to <u>rough and semi-finish</u> these precision parts. So far tolerances are being held and a good finish is obtained. Full production is not expected until next month.
- ▶ One big automotive producer considering air conditioners for its cars places the <u>cost of this optional extra at \$600</u>. High cost covers a 7 hp unit they believe is needed to give <u>quick cooling on short runs</u>.

AGE



Use a P&H AC Welder

— the only welder with Instantaneous Control

Ideal for use with inert gas. Lets you handle "hard-to-weld" metals with ease — aluminum, magnesium, brass, copper, stainless, high carbon, high alloy, and low carbon steels

A touch of your toe instantly gives you the exact heat you need — there's no time lag! That's how this P&H AC Welder gives you the instantaneous control you don't get with other welders.

When you use it on high frequency with inert gas, you can fabricate to close tolerances. And there's no burn-back to oxidize the metal before you get started.

The P&H Inert Gas Welder saves production time these five ways — no other welder makes the work so easy:

- Foot switch automatically starts power, high frequency, gas, water.
- 2. Arc starts instantly without touching work.
- Foot control instantly provides exact heat needed while welding.
- Foot switch cuts power and high frequency immediately or gradually at completion of weld.

5. Automatic time delay shuts off gas and water.

There are other outstanding P&H AC Welder features: P&H Dial-lectric Control that eliminates moving parts — for lower maintenance cost, easier operation. Built-in high-frequency unit that eliminates additional external equipment. Stepless amperage regulation. Unusual arc stability. Selector switch that gives operator choice of standard or high frequency.

Cut your welding time for non-ferrous and "hardto-weld" metals. Get faster, easier, sounder welds — fewer rejects. Use a P&H AC Welder.

Ask your P&H representative for further information — or write us.



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POWER: Expansion Lags Behind Schedule

Year-end capacity expected to fall 1.5 million kw short of goal . . . Survey summarizes expected completion timetable . . . Goals considered conservative—By J. B. Delaney.

Electric power expansion program is running behind schedule. Capacity at year's end may fall 1.5 million kw short of 84.7 million kw goal. The industry is unable to say whether power shortages will materialize this winter, but it's keeping its fingers crossed.

Delays in obtaining needed equipment and materials are the primary cause of the setback. Steel losses due to the strike may or may not aggravate the situation, depending on the steel industry's comeback. To date, steel producers have been doing a lot better than anticipated.

Another question mark is whether expected increases in demand will develop. In the Detroit area, for instance, the load has not grown this year as much as had been forecast.

Completion Timetable — A recently-completed survey covering projects of 10,000 kw or larger indicated that some 21 projects with a total capacity of 1.5 million kw, originally scheduled to come into service this year, will not make it. Another 30 projects of almost 2.0 million kw will come in this year but will be 1 to 2 months behind schedule. Forty-one others will begin producing as planned.

The 1953 program shapes up a little better. The survey shows that of 150 units of 10.1 million kw programmed, about one-half representing 4.0 million kw will come into service as scheduled, or earlier. Fourteen units of 1.3 million kw will be delayed beyond 1953. The remainder will come into service in 1953, but delays of up to 5 months are expected.

One significant footnote to the survey is that those companies who

expect their units to come in on schedule also indicate they will need special help in obtaining needed materials. Industry men warn that the 1953 picture could darken considerably. They point out that a great many machines are scheduled for completion in the last 3 months of the year. Delays of any consequence would mean they would not be available for the 1953 peak load.

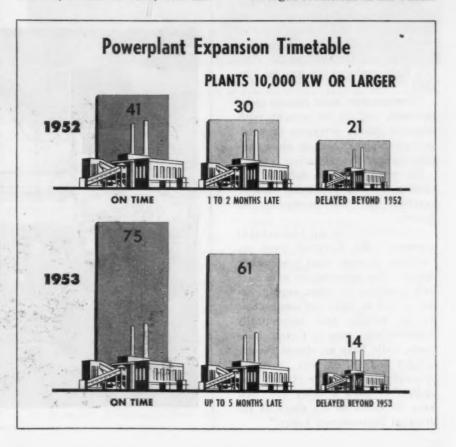
Conservative Goal—The 1952-53-54 goals are based on a program calling for a total capacity increase of 30 million kw from the 1951 capacity of 75.8 million kw. Capacity at end of 1952 would be 84.7 million kw, at end of 1953, 96.7 million kw, at end of 1953, 96.7

lion kw, and at end of 1954, 105.8 million kw.

This goal appears to be conservative. At the time it was proposed, some felt it was excessive, but a special committee studied the program and concluded that power load estimates were fairly realistic. In fact the committee felt the goal should be raised to 32 million kw to accommodate additional loads. The new AEC program, for instance, will require 4 million kw rather than 2 million as originally estimated. Several defense departments recently expressed belief the goal should be 38 million kw.

Areas to Watch—The industry hesitates to point the finger at areas where power shortages might develop should the expansion program encounter further difficulties.

Drought conditions in the Pacific



MES

GE

northwest have already forced Bonneville Power Administration to suspend the entire 388,000 kw of interruptible power supply, forcing curtailment of aluminum production in that area. The action will result in estimated loss of 800,000 lb of aluminum production daily until Nov. 1.

Other areas to be watched include Ohio and Tennessee valleys and Texas - Louisiana - Arkansas, where an influx of new industries has placed an unusually heavy strain on power capacity.

New Source — Meanwhile a warning note was sounded in Chicago last week. P. J. Lovewell, assistant chairman, Industrial Economics Dept., Stanford Research Institute, Stanford, Calif., warned the National Chemical Exposition that electric power from atomic energy for industry is only 4 or 5 years off.

Businessmen, he said, must be careful not to be caught with obsolete plants. Power utilities would be among the first to be affected, Mr. Lovewell warned. But "management need have no fear that foreseeable developments from atomic energy will replace the economic need for their respective products and services, as the electric light replaced the gas jet," he said.

"Businessmen must remain alert, however, not to be caught with obsolete plants, processes or products that place them in an untenable competitive situation."

He mentioned the definite possibility of heat-producing atomic reactors for the production of power.

"Certainly in an industrial economy," Mr. Lovewell went on, "nothing is more vital than power supply. The introduction of a vast new potential in power supply, using a fuel so light and compact as to be readily and economically transportable, even to distant locations, could have an almost revolutionary effect on our economy generally and even the remote possibility of such a thing can well have its effect on the plans of individual businessmen today."

Boom Crane Speeds Jet Production

A bottleneck that slowed production of jet engine components at Solar Aircraft Co.'s San Diego plant was eliminated by the use of boom cranes with air hoists.

Some of the production work at Solar involves lifting a part into place. The slowup occurred because almost half of the company's production force is composed of women and law prohibits them from lifting parts heavier than 25 lb.

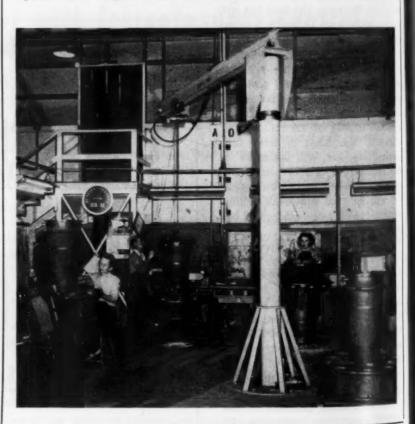
Because of the short runs and frequent design changes on jet engine parts, a complete conveyer system was not practical. And the company found that large overhead cranes could not do the job fast enough.

As a result, Solar's plant engineering department built jib boom cranes to solve the handling problem. These units proved so successful that 65 have already been installed and 20 more are on order. Total cost of each air operated jib boom is slightly more than \$400.

Each of the cranes can make a full 360° turn. They can be placed anywhere in the plant without interfering with overhead bridge cranes and do not have to rely on wall columns for support.

The cranes service from one to four machines and each has an upright column of 8-in. standard pipe, anchored in concrete. From the top extends a boom made of 6 or 8-in. I beam mounted on bearings. The compressed air motor and hoist can be positioned at any point along the boom.

Easily installed and portable, the cranes vary in capacity from $\frac{1}{2}$ to $1\frac{1}{2}$ tons. This is more than enough to handle the jet engine parts which weigh between 100 and 500 lb.



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INSTRUMENTS: Industry Grows Fast

Control devices vital to development of new manufacturing processes... Sales at \$2 billion mark last year... A war baby in two wars... Convention draws 10,000—By E. C. Beaudet.

Vital factor in the growth of manufacturing processes is the development of instruments to control them. Industrial and scientific instruments are more and more being called on to solve production problems and keep track of plant operations. As new problems and processes come up, new instruments must be developed to go along with them.

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To keep up with developments in this rapidly growing field more than 10,000 engineers from all branches of industry met in Cleveland last week at the Seventh National Instrument Conference & Exhibit, sponsored by the Instrument Society of America.

About \$10 million worth of testing, regulating and metering equipment was shown by 192 companies at the exhibit. (About 100 new or revised models of instruments are introduced every month.) Over 100 papers were presented at the 27 technical sessions, covering all phases of instrumentation. And seven other local and national scientific and engineering associations held sessions at the conference.

War Baby—The instrument industry is a relative newcomer in American manufacturing, but it has grown by leaps and bounds. Before World War I the United States relied mainly on foreign countries, particularly Germany, for its instruments and apparatus. When war cut off these sources, domestic companies sprang up to fill the need. They've been growing ever since.

World War II lit hotter fires under expansion. Laboratories, industry and munitions were supplied with over 20,000 different types of instruments by more than 1000 producers. Demand for test instruments and components in the electronics field alone grew

so large that many manufacturers just couldn't expand fast enough. They had to provide drawings, tools and knowhow to firms outside the industry to meet war needs.

For some classes of instruments unit output jumped 800 to 1000

There are now over 1500 producers in this country. Companies are straining to meet government orders and backlogs are heavy. Last year sales came to over \$2 billion for the entire industry. This includes both those for laboratory and plant use. For the first six months of 1952 sales of all types of instruments were running about 10 pct over the same period last year with some sources predicting a sales total of over \$3 billion for 1952.

At an early session of the 5-day Cleveland conference, Porter



CONVENTION: Over 10,000 engineers visited the ISA exhibit at the Cleveland Public Auditorium. More than \$10 million worth of instruments were shown by 192 companies.

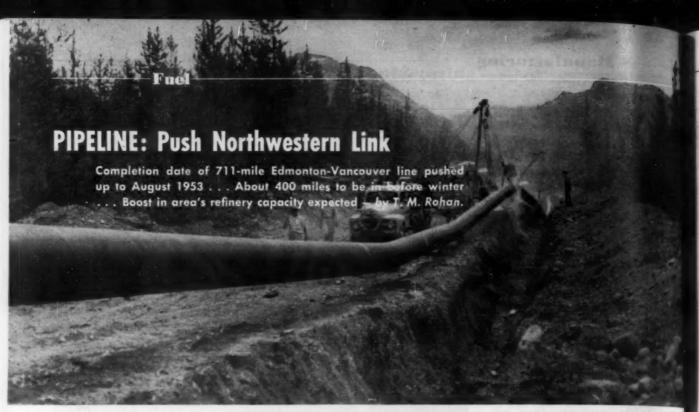
pct during the war years. Automatic controller output is estimated to have quadrupled in that period. Few modern plants could function without flow meters, pressure gages, automatic control valves, etc.

Use More—Aside from the impetus of armament programs, a good part of the industry's growth is due to a greater use of instruments for control of manufacturing processes. Since 1935 the rate of instrument buying for new plants has doubled. Instrumentation on plant equipment is rising rapidly—from 5 pct in 1939 to 20 pct today and still going up.

At the present time the industry is again going at a fast clip. Hart, chief engineer for Dow Chemical Co., was elected president for the coming year. William Wildhack, chief of the basic instrumentation section of Bureau of Standards was elected secretary and J. T. Vollbrecht, president, Energy Controller, Inc., was made treasurer.

Although not formed until 1946, interest in the activities of the society has been keeping up with the growth of the industry itself. At present its membership runs in the neighborhood of 5500. Local chapters are in about 50 cities.

The exhibit next year, to be held in Chicago, Sept. 21-25, is expected to take up around 33,000 sq. ft. of floor space as compared with 29,000 in Cleveland.



They're really laying it on the line in Canada these days. Across 711 miles of rugged southwestern Canadian mountains 1500 men are welding 3 miles per day on a vital crude oil pipeline link between Alberta oilfields and the Pacific Northwest—a line which will have a heavy economic impact on that area.

Despite the steel strike, the completion day was advanced last week 1 month to August 1953. So far 150 miles have been laid. Between 330 and 400 miles will be in before winter sets in.

The 24-in. line—largest in Canada—will use 148,000 tons of pipe and cost over \$80 million. It will be the first practical link between the rich Edmonton, Alba., fields and the refineries at Vancouver, B. C., now supplied by tanker from California. Originally scheduled for 75,000 bbl. daily capacity, demand has already pushed this to 120,000 with an ultimate of 200,000. Three instead of the two originally planned pumping stations will be used to start, with an eventual total of six.

Construction — Work is being supervised by Canadian Bechtel Ltd., a subsidiary of the San Francisco engineering firm famed for its Canol, Iran and other pipeline jobs. Canadian Bechtel acts as agent for Trans Mountain Pipe

Line Co. of Toronto, owned by several major oil firms and Bechtel interests.

Veterans of Texas, Arabia and Venezuela jobs work shoulder to shoulder with raw Canadian recruits to lay as much pipe as possible before winter snows. Since the working season doesn't start until May and lasts only about 5 months, work was already on a tight schedule before the steel strike cut into the picture. Reduced deliveries on pipe mean hiring extra men to meet the schedule.

U. S. defense authorities are



INSPECTION: Buck mule deer checks up on pipeline progress in Jasper Park, Alberta.

vitally interested in early completion of the line. They want a supply replacement for submarinevulnerable tankers. In an emergency oil could be carried by rail, but cost is generally prohibitive. miles for

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California oil firms, already financially interested in the line, will welcome the Canadian oil to relieve the strain on California wells and release tankers.

Refineries Needed — Economic impact of the pipeline will be felt throughout the Pacific Northwest. Since even the initial 120,000-bbl-per-day pipe capacity far exceeds the present 40,000 bbl Vancouver refining capacity, a great refinery expansion in the Northwest is indicated.

Imperial Oil Ltd. (Standard of N. J.) recently announced a \$10-million expansion of its Ioco refinery near Vancouver. Shell is investing \$10 million to double its current capacity there to 15,000 bbl daily. Standard Oil of British Columbia (Standard of California) will probably follow suit shortly.

Refinery expansion will probably be even greater in the U.S. since the tariff on gasoline into the U.S. is 10 times greater than on crude oil, which has recently been dropped from 21 to 10.5¢ per bbl. And, although not presently announced, the line will probably

be soon extended the extra 130 miles from Vancouver to Seattle for refining and distribution through the Northwest.

Pipe Sources-Most of the 148,-000 tons of pipe comes from western firms-90,000 from Consolidated Western (U. S. Steel) at San Francisco and 50,000 from Kaiser at Fontana, Calif. Early tonnage of about 8000 to get the project going was also fabricated by A. O. Smith Corp. of Milwaukee from Granite City Steel Co. plate from Granite City, Ill. Kaiser brings the plate from Fontana to Napa, north of San Francisco, where it is made into Rasalt-Kaiser pipe at Basalt Rock Co. on a fabrication-in-transit arrangement. Thickness varies from 1/4 to 1/2 in. in lengths of 32 to 41 ft.

The line generally parallels the Canadian National R. R. through Yellowhead Pass in the Canadian Rockies to Kamloops, B. C., where it adjoins the Canadian Pacific R. R. down the Fraser Valley to Vancouver. This is the easiest way through the mountains and also greatly facilitates pipe delivery and handling.

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Pipe is all welded and buried 30 to 36 in. underground. Luckily no bridges or tunnels are involved. Shutoff valves are placed an aver-



CHECKING UP: X-ray inspection equipment in field use on Trans Mountain line.



TERRAIN: Coat-and-wrap crew hard at work in a swamp east of Yellowhead Pass.

age 20 miles apart and at rivers and other critical points. After completion, maintenance crews will have the lonely year-round job of patrolling. Three pumping stations at Edmonton, Kamloops and Marlborough handle the pumping. Eventually six stations will be used to boost capacity to over 200,000 bbl daily. Rugged terrain makes considerable pressure regulation necessary.

Backers—The line was engineered and largely sponsored by Bechtel interests. Discussion of the project started in 1950 when the need for new markets for Alberta oil became obvious. More impetus came in 1951 when Alberta Premier E. G. Manning said oil output in the province had exceeded capacity of the \$90-million Superior, Wis., line. He stressed the need for a new outlet.

Trans Mountain was formed by Bechtel and the oil firms, among them California companies already straining to serve the Pacific Northwest. They were Imperial, Standard of British Columbia, Shell of Canada and Canadian Gulf Oil Co., Ltd. Later Richfield and Union, both of California, plus 14 independent producers joined.

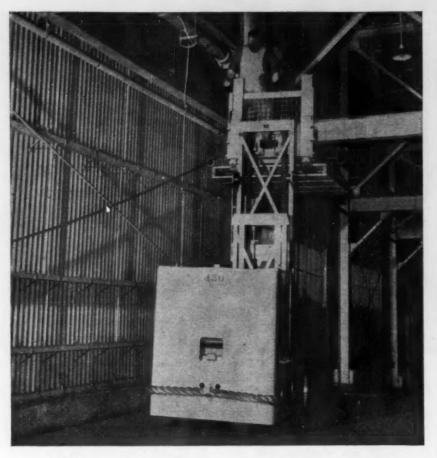
First mortgage bonds of \$65 million were snapped up by Prudential and several Canadian insurance firms. Of this amount

\$35 million was sold to U.S. institutional investors and \$30 million to Canadian interests. All was guaranteed by the sponsoring oil firms.

Pending — Still awaiting final U. S. and Canadian OK are plans for a natural gas pipeline from northern Alberta and British Columbia to Vancouver, Seattle, Portland, and possibly San Francisco. This would extend 2000 miles and cost over \$100 million. The Alberta conservation board has estimated gas reserves there at 7 trillion cu ft.



UNDERWATER: Concrete weights on line at an approach to the Fraser River crossing.



Material Handling plus Maintenance

This industrial truck, regularly employed for handling material in unit loads of 2000 to 4000 pounds, serves also to save time on many kinds of plant-maintenance jobs.

It is powered by a 28-cell D8 Edison Nickel-Iron-Alkaline Storage Battery assembled in a demountable steel box, rated capacity 20.16 kwhr, which has been found ample for full-shift truck operation. Exchanging batteries at the end of one shift, gives the truck operating power for the next shift.

The battery is charged from current produced wholesale by a central station—the lowest cost power obtainable. In combination with a high-torque electric motor, it gives the truck an instant flow of power for starting and acceleration, yet is instantly and completely off during the many momentary pauses between the forward,

back, up, down, and tilting motions of the truck while engaged in picking up, carrying, tiering and setting down loads.

The electric-motor drive is just as dependable and trouble-free as in stationary-machine drives. The battery, its cells made of steel, its alkaline electrolyte a preservative of steel, its principle of operation foolproof, is the longest-lived, most trouble-free of all types of storage batteries. Send for our bulletin Modern Material Handling for more information on the advantages of the unit-load method of handling material, the power requirements of industrial trucks and the characteristics of Edison batteries. Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, N. J. Thomas A. Edison of Canada, Limited, Montreal.



F. DISON

Nickel · Iron · Alkaline STORAGE BATTERIES

May Escape Inventory Ceiling

Structural steel fabricators are likely to be exempted shortly from the 30-day inventory ceiling limit.

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Under the plan now under consideration by National Production Authority, such exemption would be granted on the industry's contract inventory. Such exemption probably would not be a blanket

Construction inquiries, awards on p. 109

increase at first but made only upon justified requests for specific jobs.

However, NPA has promised seriously to consider lifting inventory controls completely on structurals early next year, but says overall inventory controls cannot be lifted until well into 1953.

Meanwhile, with construction activities heading into their off-season, NPA said last week that the construction industry had no cause to worry about steel supplies.

The agency said it will allot fourth quarter steel to the industry on the basis of 80 pct of third quarter allocations—996,000 tons of structurals and 684,000 tons of plates.

As for first quarter 1953, NPA said it would make allocations equivalent to 60 pct of third-quarter allotments, at the least.

In addition, provision will be made for carrying over uncashed third-quarter CMP tickets. Uncashed fourth-quarter tickets are likewise to be revalidated for first quarter 1953.



"Don't worry. I've worked with him before."

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STRIKES: Can Steel Escape Them?

Steel people hope for peace in coal, refractories industries ... Nearly 50 million tons of steel lost by strikes since war ended . . . Coal's Lewis plays both ends—By W. V. Packard.

Steel people never feel altogether secure on the labor front. Right now they are worried about a booby trap that cagey John L. Lewis seems to be setting.

Though their coal stocks above ground average more than 2 months' supply, they don't feel at all smug about them. Past experience has taught them that John L. always finds some way of hitting where it hurts, and he usually ends up making it cost them plenty.

As if coal uncertainty weren't enough, an industry-wide strike in the refractories industry is threatened Sept. 20. This also poses a threat to the steel industry which must have refractories to repair and reline its furnaces.

Despite accelerated demand for refractories resulting from furnace damage during the recent steel strike, there has been no shortage. Some have even raised the question that this industry might be expanding more than is needed. But a strike could change the outlook quickly because most steel firms have not ordered big stocks of brick in advance.

Why Worry?—Since coal and refractories are both in ample supply, you might wonder at steel's deep concern over negotiations in these industries. A look at the record shows why. It shows nearly 50 million tons of steel production lost because of labor trouble since World War II.

That's an average of about 7 million tons a year. Only 4 other countries in the world produce as much steel as we have been losing annually in our economic battles.

Steel people are aware that their losses from strikes have not always been confined to trouble in their own industry. Still fresh in their minds is the loss of more than a million tons of steel output

because of the coal strike in February of 1950. And when it was settled they absorbed the high cost of peace.

Enter Mr. Lewis — Now Mr. Lewis has center stage again. And he gives every indication he will play his role to the hilt.

He bided his time through most

a shorter working day and/or spread-the-work plan.

Booby Trap—It is in the last of these that steel people see a booby trap for them. Captive miners have been working 5 days a week, with some overtime. Southern miners work no more than 3.

This seems to fit in very well with Mr. Lewis' long standing desire to "stabilize" the coal industry. He has already separated northern and southern operators by setting different contract termination dates. In the North it is Sept. 21; in the South it is Oct. 1. No contract, no work policy would

Ambush in the Offing?



of the summer while the spotlight of national attention was on steel. This permitted the steelworkers to carry the assault against stabilization, which, though successful, was costly to themselves as well as industry. Now he's aproaching a pre-election showdown. Though coal surpluses dealt him a rather poor hand, he's using it to make a play for the biggest pot of all.

What he will finally settle for only he can say. But he seems to be going after (1) a wage increase of at least 20¢ an hr; (2) higher royalty payment of 10¢ for the miners' welfare fund; and (3) lead to a strike.

Although the northern contracts expire first, Mr. Lewis has been doing his talking with the southern soft coal operators and the anthracite producers.

In view of their slow business the southern operators would appear to be the logical people to sponsor a share the work idea which would call for premium payment for more than 3 days' work per week. Or are his conversations with the southern group merely a smokescreen with which he's trying to worry northern operators into agreeing to a fat wage rise?

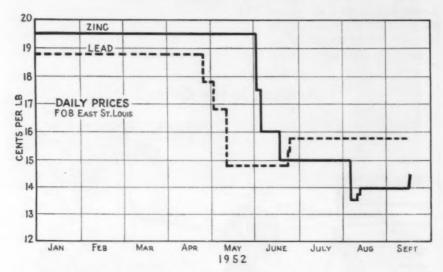
METALS: Lead, Zinc Look Good

Now selling for less than at beginning of year . . . Zinc supply outlook good, demand freshening . . . Lead reflects lower summer demand . . . Battery output up-By R. L. Hatschek.

There are very few metals that are cheaper today than they were at the beginning of the year. But lead and zinc are.

Only last October these two were in such short supply that

Special High Grade (used for die-castings) slumped as a result of automobile production limits. And the automakers couldn't use any nickel under chrome plating. Without this layer of nickel,



Office of Price Stabilization boosted ceilings 2¢ to 19.0¢ per lb for lead and 19.5¢ per lb for zinc. The agency was criticized at that time for placing a ceiling on import prices since world prices for both metals were above ceilings.

Imports in 1951 were poor, about half the usual total for lead and well below the 1950 total for zinc despite greater demand. About a third of U.S. lead is imported.

But this year the situation changed for the better. World prices sagged-and so did domestic prices. Imports soared. Supply topped demand.

Zinc's Path-Because of high steel output and high demand for zinc for galvanizing, the price remained firm at 19.5¢ for Prime Western Grade (used for galvanizing). But there was a softness in the higher grades which could not be shown because they had to be held at the traditional price differential.

chrome plating just doesn't come up to standard. So the car manufacturers didn't use so many zincbase castings that had to be prettied up. Today, a very thin nickel plate is permissible, thus bolstering the market for Special High Grade.

No Galvanizing — The steel strike, of course, practically shut off demand from galvanizers like a blown fuse. Zinc dropped to a low of 13.5¢ on Aug. 6. It rebounded shortly thereafter to 14¢ and last week to 14.5¢.

During this strike period, stocks of slab zinc in smelters' hands shot from 33,144 tons on June 1 to 96,919 tons on Aug. 1. An anticipated further increase in August never materialized as consumers took advantage of the relatively low price to buy a bit more than was produced in the month. At the end of August, stocks stood at 96,651 tons. This is the highest point since Oct. 1949.

The general supply picture looks good. Unfilled orders on Aug. 31 totaled 44,522 tons. Except for a brief period during the strike, this is the lowest since Dec., 1949. Production of slab zinc is averaging about 80,000 tons a month and the year's total will come very close to the all-time high of 1943-if it doesn't top the record.

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Government is no longer stockpiling on a regular basis since the strategic supply is deemed as adequate at least. Zinc will be accept. ed but nobody is offering any. Reason for this, in the face of huge stocks, may be that most of the ore which this metal represents was paid for on the basis of higher priced zinc. Producers would rather hold this, hoping for higher prices than take a book loss.

Lead Position - Though it's called zinc's twin, lead has differed a little in market activity this year. Trend was very similar, but timing and reasons were different. Prices dropped well before zinc. Skid started late in April and continued for only 2 weeks, hitting the bottom at 14.8¢ f.o.b. East St. Louis on May 12.

About a third of the lead supply goes into batteries-production of which is seasonal. Summertime is low demand time for lead. For this reason, General Services Administration decided to purchase an intermediate civilian stockpile of 30,000 tons of lead.

This metal will be held, then sold to civilian consumers. Whatever remains at the end of the year will then go into the national stockpile. Actually, this put an effective floor under the price, preventing a further decline. Following this action, prices went up 1¢ to the present 15.8¢ per lb quotation.

Battery production is way up now. About 2.5 million replacement batteries were made in July and it now seems possible that the industry will hit its goal of 23 million for the year if this pace can be held.

Mine production is running about 27,000 to 28,000 tons per month, about average. But imports are way up.

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FORGERS: Play War's Anvil Chorus

Call of war puts the emphasis on forgings once more . . . Industry now has about 6 million tons capacity . . . Orders grow after Korea . . . Defense needs can be met—By T. Metaxas.

The air is being stirred more violently today by the thunder-claps of the forging industry's hammers as they answer this new summons of war. Vulcan would sour with envy could he see anvils and hammers that weigh many tons and can exert such force that even huge hot ingots are disciplined into desired shapes.

Closed die and open die and hammer forge shops today have about 6 million tons of annual capacity. Industry people say this is enough to meet all the needs of defense and provide a comfortable margin for the civilian market if steel is available. Engineering work on forgings for the Air Force's heavy press program is completed and the industry knows it can meet all demands.

Now NPA is warning the drop forgers that military needs in 1953 will call for "harder and larger" forgings. It will be a time for research thinking caps.

Blooms in War—Generally, the forging industry is not yet working at top capacity. Heavier forgings for more massive implements of war and for heavy forging and extrusion presses are nagged by the most insistent demand. War demand for smaller forgings stresses the need for more durable vehicles, tanks, jet engines, larger aircraft, gun barrels and gun mounts, etc. This means stronger parts of forged steel.

After Korea the forging industry entered a speed-up phase. With new techniques, heavier equipment, capacity expanded considerably and is being put to use. Sponsoring this growth were the traditional war needs for greater quantities of stronger components to endure on the battlefield, new needs for goliath war equipment,

forgings to go into machinery for other expanding industries.

Tolerable Size — Forging strengthens metal and saves large amounts of steel by forming a smaller workpiece to tolerable size and contour without fantastic expense and labor in machining time. For example, one pre-World War II part used 475 hr of machining. It was literally carved out of a block of steel. When it was finally forged, machining time dwindled to 40 hours.

A few forging shops built during World War II to produce the mammoth stuff have been kept in mothballs and reactivated in this emergency. It must be considered that the great part of a forging shop's lifespan is spent working for the civilian market. Only a limited number of heavy forgings can be sold. This explains the reluctance of some forge shops to invest sky-high sums into new presses and new buildings to feed a war market that may vanish.

The Air Force is financing its own heavy press program, involving presses ranging up to 50,000ton pressures to make in one stroke aircraft forms now requiring a multitude of parts and rivets.



"Poor Billikins. Posted again for low output."

War Growth—While war puts a trying strain on forging, it greatly abets its growth. World War II can be considered the renaissance of the industry. After the war, business simmered down. Shops making small forgings made the transition to civilian sales far more easily than the shops with heaviest capacity. Inshops with heaviest capacity.

Machine tool troubles besetting forgers carrying defense loads have eased substantially. Transportation of giant forgings still requires much thought and railroad scheduling and ingenuity. Some firms report difficulty in working high density alloys.

The steel strike loss of production will have its hurtful effect on forging—as it will on other industries. There was some trouble before in getting quality hot top steel because the shell program was bleeding off a limited supply. The strike is seen aggravating this situation.

Inventory Mix-up—A byproduct of the strike was National Production Authority's order limiting steel inventory to 30-days. It's unworkable in the forging industry. Forgers keep slim stocks of steel on hand for future orders but must keep fat inventories for orders in process.

Because of long lead times on forgings, resulting from long and laborious steps of production, steel sometimes lies idle for months. The industry feels it would be "safe" with an inventory allowance of 90 days on carbon steel, 120 days on alloy and high density steels.

Forgers buying from mills must buy steel in quantity. A forger needing 100 tons for a 5 month order cannot buy 20 tons per month. He buys the entire lot of 100 tons to the sizes and weights he needs and holds the steel in stockpile as production continues.

Sometimes a die breaks and steel is held while months are consumed in making a new one. NPA is prepared to make exceptions to its inventory regulation for the industry—but this must be done



DOLAN STEEL flattens a wide range of materials and sizes with their TORRINGTON 9-ROLL FLATTENER

Designed to remove the buckles and waves from slab, strip and sheet metal, producing it commercially flat, Torrington Flatteners are made in a wide range of sizes, for ferrous or non-ferrous metals. The model shown above, in Dolan Steel Company's Bridgeport warehouse, handles mild steel in gauges from .050" to .187". All Torrington Flatteners have the built-in features that mean accurate, dependable performance over a long life of grueling service.

CHECK THESE SUPERIOR FEATURES:

- All rolls are of alloy steel, hardened and ground, with large necks and bearings. All rolls are driven by spindles or universal joints; drive pinions are in oil-tight casings.
- Top rolls have parallel individual adjustment; roll housings are of capped type, for easy roll removal.
- Wolded steel base is entirely self-contained; motor is mounted overhead to conserve floor space.
- All gearing is totally enclosed and runs in eil; all moving parts are amply guarded for operator protection.
- 5. Built to the precision standards for which Torrington machines have been famous throughout American industry for over 65 years.

Torrington's decades of experience and knowledge, gained from continuous collaboration with foremost makers and fabricators of metal, are at your service to help you put Torrington Flatteners — or any other Torrington special-purpose machinery — to profitable use in your plant.

Call or write Torrington for information and name of nearest Torrington representative,

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DESIGNERS AND BUILDERS OF MILL MACHINERY FOR SIXTY-FIVE YEARS

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Two Segments — The forging industry has two phases—closed die, and open die and hammer. Closed die forgings employ male and female dies. Drop forging hammers range from 500 lb to new ones of 50,000 lb falling weight. Finished forgings of up to 1325 lb have been produced. Yet preponderance of closed die activity falls into lighter forgings, ranging from monkey wrenches to connecting rods.

The open die and hammer group is the glamor boy of the industry, plying the blacksmith's trade on an awesome scale. Here the red hot billets and ingots are pounded to size and shape by hammers ranging in pressure from 1500 lb single frame hammers to the new giants capable of 15,000 tons. Unit weights of these forgings range from 280 lb to 300,000 lb.

A 50,000-ton Air Force press employs three forgings locked together to form one section weighing 646,000 lb. The section towers as high as a 10-story building. The press has not been made which could have made this section as a one-piece forging. The ingot would have been as heavy and unwieldy as a house.

Optimism—If charted, business activity of the industry shows hills and valleys. The hills represent war effort and the valleys are the civilian norm. Forgers are generally optimistic. They feel that old markets are expanding, new markets are developing. Envisaged in the future are atomic energy installations that will demand huge forgings. Agricultural equipment, autos, diesel locomotives provide a continuing market apt to grow.

Some Washington people well versed in what makes the forging industry tick are convinced that the nation should safeguard its potential to produce war materiel by hanging peacetime mothballs on enough heavy forging capacity to afford us a springboard for emergency.

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BUSINESS OUTLOOK:

Executives anticipate increase in net sales during fourth quarter.

Businessmen's expectations for the fourth quarter, as compared with the same period last year, indicate that net sales will increase while net profits remain status quo. Most executives believe the current high level of employment will continue. Selling prices and inventories are expected to remain as is.

These views were expressed by more than 1200 business executives surveyed by Dun & Bradstreet.

Survey shows that of all the businessmen contacted, 61 pct expect net sales to be higher than in the fourth quarter last year. Twenty-four pct think there will be no change, while 15 pct anticipate a decrease. Opinion on net profits is more evenly divided. Thirty-four pct see net profits rising; 30 pct, no change; 36 pct, decrease.

Majority of the executives (65 pct) believe selling prices will stay at the same level. Only 16 pct predicted an increase, and the remainder, 19 pct, expected reductions.

The study shows that though many concerns are continuing to reduce their inventories, the general trend is one of stabilization. Breakdown was as follows: 24 pct, increase; 42 pct, no change; 34 pct, decrease.

Nearly all executives hoped to maintain (78 pct) or increase (17 pct) the employment level as compared to the record in the last quarter of 1951. Only 5 pct believed employment would decrease.



"Miss Hoskins! Your duties as time checker do not require you to indicate whether or not an employe is having a 'good time', or a 'bod time'!" A very

solution to your

problem. See the man with a

Versatile Torrington Spring Coiler

In spring coiling, the words "Torrington" and "Versatile" are synonymous! When you desire springs produced to meet exacting requirements, just call the professional springmaker who has a Torrington coiler. He's the man who can fill your needs with accuracy, speed and economy. On special springs, our sales department will gladly assist you in finding a source of supply, or help your springmaker devise just the right tooling to produce it.

Torrington's 14 different Spring Coilers cover a range of wire diameters from .003" to .750"



MODEL W-11 SPRING COILER

Wire diam. range: .015" to .072". Length per spring: 0" to 42". O. D. Coil Range: 3/32" to 19/16". Produces 23 to 190 springs per minute with variable speed drive. Extra wire feed gears, torsion, other attachments available.

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TORRINGTON MANUFACTURING COMPANY TORRINGTON, CONNECTICUT

ENGINEERS: Atomics to Zirconium

Centennial of Engineering conference holds sessions on wide range of problems . . . Fears about petroleum shortage calmed . . . Titanium, atoms discussed-By K. W. Bennett.

Chicago seethed with engineering talent last week as the Centennial of Engineering and the centennial conference on industrial research of Armour Research Foundation convened simultaneously. Subjects ranged from atomics to zirconium, and while many of the papers were devoted to recapitulating scientific advances of the last 100 years, a number peered into the possible future of mineral supplies and technology.

Titanium - The latest wonder metal, titanium, was examined briefly, and visiting engineers and research specialists learned that techniques for welding, brazing, forging, and case hardening the light metal are being studied. Figures on creep-rupture, hot tensile, and hot hardness strengths are evolving.

Currently looking very good is titanium alloyed with aluminum. Welding, being tested by Armour Institute and several Midwestern firms, looks like a tough problem. An aging factor seems to set in and pre-or-post welding heat treatments may be the only cure.

Molding is preceeding with conventional sand molds and copper, water-cooled molds being employed. Still sought is an adequate test for oxygen content. Several firms, seeking a reliable test for incoming titanium-alloy parts, were told that conventional hardness tests were not a reliable indicator of titanium's later performance. Titanium plating is also receiving study.

Atomics - An Atomic Energy Commission official indicated that a breeder reactor unit in Idaho in now producing electrical current.

The reactor was hooked to a steam turbine generator last Dec. 20 to produce what AEC believes is the world's first important amount of electrical energy from a nuclear source. What is even more important, the furnace also makes plutonium.

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Petroleum - Fears that we would be emptying the last dribbles of the nation's oil reserve into auto gas tanks within the next 20 years were partially allayed by fuel engineer speakers.

To date the major quantities of oil have been discovered at depths of less than 5000 ft and before January 1950, only about 600 exploratory wells had been drilled to depths of more than 12,000 ft. At the present exploratory rate of about 10,000 wells per year, it would take over 100 years to drill one exploratory well in each square mile of prospective oilproducing area.

Metals Economy - One for the fact book. The population has doubled during the 100-year period celebrated by the centennial. But metal production during the same period increased by 25 times. Of this new metal production over 90 pct is iron and steel. Copper, zinc, lead, and aluminum constitute more than 9 pct. Antimony arsenic, barium, beryllium, bismuth, boron, cadmium, calcium, cerium, and other rare earth metals, cesium, cobalt, etc. represent less than 1 pct.

Titanium production will rise to thousands of tons per year in the near future. Iron, aluminum, magnesium, and titanium have special future importance because of the relative abundance of their ores. Nickel and tin will continue to be tight in supply and of widespread value to industry. Scrap metal will become of increasing importance.

Aluminum will be number two on the important metals list, surpassed only by iron and steel.

STEEL: Output of Ingots, Castings Rises

As Reported to the American Iron and Steel Institute

	Openhe	arth	Bessen	ner	Elect	ric	Teta	ı	Outsulated	No.
1951	Net Tons	Pct Cap.	Net Tons	Pct Cap.	Net Tons	Pct Cap.	Net Tons	Pet Cap.	Net Tons Weekly	in Month
January	7,846,657	101.4	431.725	90.4	570.084	88.8	8.848.466	99.9	1,997,396	4.43
February	6,936,993	99.3	326,112	75.6	507,302	87.5	7,770,407	97.2	1,942,602	4.00
March	8.061.346	104.2	408,926	85.6	606,358	94.5	9,076,630	102.5	2,048,901	4.43
1st Quarter	22,844,996	101.7	1.166,763	84.2	1,683,744	90.4	25,695,503	100.0	1,998,095	12.86
April	7.858.839	104.9	392,472	84.9	594,668	95.7	8.845.979	103.1	2.062,000	4.29
May	8.072,994	104.4	408,650	85.6	618,511	96.4	9,100,155	102.8	2.054.211	4.43
June	7,669,449	102.4	403,001	87.1	589.898	94.9	8,662,348	101.0	2,019,195	4.29
	23,601,282	103.9	1,204,123	85.9	1,803,077	95.7	26,608,482	102.3	2,045,233	13.01
	46,446,278	102.8	2,370,886	85.0	3,486,821	93.0	52,303,985	101.1	2,021,801	25.87
July	7,706,078	99.8	411,599	86.4	566,818	88.5	8,684,495	98.3	1,964,818	4.42
August	7,694,965	99.5	436.822	91.5	607,308	94.6	8,739,095	98.7	1,972,708	4.43
September	7,853,801	102.4	404,726	87.7	601.830	97.0	8,660,357	101.2	2,023,448	4.28
	23,054,844	100.5	1,253,147	88.5	1,775,956	93.4	26.083.947	99.4	1,986,592	13.13
	69,501,122	102.0	3,624,033	86.2	5,262,777	93.1	78.387.932	100.5	2,009,947	39.00
October	8,028,721	103.8	458,128	95.9	635,037	98.9	9,121,886	103.0	2,059,118	4.43
Nevember	7.750.845	103.5	411.954	89.1	636,553	102.4	8.799.352	102.6	2.051.131	4.29
December	7,885,830	102.2	396,831	83.3	608.017	94.9	8,890,678	100.6	2,011,466	4.42
4th Quarter	23,665,396	103.1	1.266,913	89.4	1,879,607	98.7	26,811,916	102.1	2,040,481	13.14
	48,720,240	101.8	2,520,060	89.0	3,655,563	96.0	52.895.863	100.7	2,013,546	26.27
Total	93,186,618	102.3	4,890,946	87.0	7,142,384	94.5	105,199,848	100.9	2,017,642	52.14
January	8,103,123	100.7	407,298	89.3	825,696	89.7	9,136,117	99.3	2.062,329	4.43
February	m man ann	102.4	382.712	89.8	571,432	87.6	8.657.210	100.7	2,091,114	4.14
March	8,401,140	104.4	378,861	83.1	624,190	89.5	9,404,191	102.2	2,122,842	4.43
1st Ouarter	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27, 197, 518	100.7	2,092,117	13.00
April	7,101,199	91.1	323,006	73.2	566.937	83.9	7,991,142	89.7	1,862,737	4.29
May	7,291,865	90.6	318,642	69.9	594,089	85.2	8,204,596	89.2	1.852.063	4.43
June1	1.446.927	18.6	22,862	5.2	169.702	25.1	1,639,491	18.4	382,166	4.29
	15,839,991	67.0	664,510	49.6	1,330,728	85.0	17,835,229	66.0	1,370,886	13.01
1st 6 months1.		84.8	1.833,381	68.5	3,152,046	77.0	45.032.747	83.4	1,731,363	26.01
July1	1.347.587	16.8	2,000	0.4	277,371	39.8	1.626.958	17.7	368,090	4.42
August ²	7,604,000	94.5	309,000	67.8	586,000	84.0	8,499,000	92.4	1,919,000	4.43

Note—Percentages of capacity operated in 1951 are calculated on weekly capacities of 1,745,337 net tons openhearth, 107,806 net tons bessemer and 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of Jan. 1, 1951 as follows: Openhearth 91,054,020 net tons, bessemer 5,621,000 net tons, electric 7,554,630 net tons, total 104,229,850 net tons openhearth, 102,926 net tens bessemer and 157,477 net tons electric ingots and steel for castings, total 2,077,040 net tons; based en annual capacities as of Jan. 1, 1952 as follows: Openhearth 94,973,780 net tens, bessemer 5,381,000 net tons, electric 8,232,890 net tons total 106,587,670 net tons.

1 Revised.

2 Preliminary figures, subject to revision.

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CANS: Quota, Price Aid Promised

Controls officials reassure tin can manufacturers that they will get enough tinplate . . . Tentative first quarter figure is 1,150,000 tons . . . OPS studies make price rise certain.

Tin can manufacturers have been told by control officials not to worry, that the industry will probably get enough CMP tickets for tinplate to carry them through early 1953. And pricing relief appears definite.

A tentative figure of 1,150,000 tons for the first quarter is being studied by National Production Authority. But whether this amount of tickets could be cashed depends upon the steel industry's production rate for the remainder of the year, officials admit.

On A Spot—A spot check by NPA has confirmed that the tin can industry is on something of a spot. Inventories are at the lowest levels in a long time, and that there will be only a few carry-over tickets.

It is now estimated that carryovers from the fourth quarter into 1953 will amount to less than 85,-000 tons—about 5 pct of the quarterly production of tinplate, according to NPA figures.

More Quotas—Consumer durables manufacturers are being considered for a possible additional allotment of 33,000 tons of blackplate for December, January, and February. This would be on a supplemental basis and included in extra supplies would be makers of such items as venetian blinds, hollowware, toys, and so on.

Exporters are also being considered for an allocation of about 74,000 tons of tinplate for the first quarter. This would be in addition to directives which already provide 96,000 tons for export during December, January, and February.

Earnings Study—Some price relief seems certain to result from Office of Price Stabilization's study of industry earnings data.

A "tentative review" of perti-

nent figures, OPS says, indicates that a measure of relief is called for under earnings standard rules. The agency expects to continue perusing the data with a view to calling in manufacturers' spokesmen for discussions at an early date.

Some industry representatives have told OPS that one approach to price relief might be a Capehart-type adjustment, plus a pass-through of the increased cost of tin plate.

Tungsten, Moly Controls Lifted

Allocation control over the use of pure tungsten and pure molybdenum was lifted late last week through amendment of M-81.

National Production Authority said both materials were in sufficient supply to meet defense, defense-supporting, and non-defense requirements.

Current amendment on the orderdoes not broaden the uses of either pure tungsten or molybdenum. Nor does it apply to ferrotungsten and similar forms of molybdenum.

Reporting procedures must be continued and prohibitions contained in M-81 will be enforced.

Need More — Meanwhile, revising its earlier estimates upwards, Defense Production Administration now figures that the required supply of tungsten ores needed by 1954 will amount to 40 million lb of contained tungsten.

This is a boost of 6 million lb above the last estimate. It includes both domestic production and imports, the latter making up the bulk of supply.

Tungsten requirements have grown by leaps and bounds. Present estimates are about 31 million lb more than the 1950 rate of new supply, which was 9 million lb.

This newest expansion goal

IRON & STEEL: July Output By Districts

As Reported to the American Iron and Steel Institute

BLAST			PIG IRON		SPIEGEL, FERRO- MANGANESE		TOTAL			
FURNACE —NET TONS	Number of Companies								Pet of	Capacity
DISTRICTS	Com	Annual Capacity	July	Year to Date	July Year to Date	July	Year to Date	July	Year to Date	
Eastern	12 17 6 7 8 3	13,983,580 27,468,600 7,501,100 15,703,740 5,648,620 3,476,700	152,444 316,348 156,665 184,162 98,707 87,649	5,848,147 11,333,441 3,125,685 6,300,651 2,473,372 1,535,683		149,333 115,489 29,753	157,929 316,348 156,665 184,182 99,759 87,649	5,997,480 11,448,930 3,125,685 6,300,651 2,503,125 1,535,683	13.4 13.6 24.7 13.9 20.9 29.8	73.7 71.6 71.6 68 9 78.1 75.9
Total	35	73,782,340	995,975	30,616,979	6,537	294,575	1,002,512	30,911,554	16.1	72.0

																		(Incl. /	TOTAL S		ngots)	ALLOY	STEEL	CARBON	INGOTS
STEEL -NET TONS	panies				Pct of	Capacity																			
DISTRICTS	Number	Annual Capacity	July	Year to Date	July	Year to Date	July	Year to Date	July	Year to Date															
Eastern	23 33	21,709,870 42,350,760	182,656 728,594 223,917	9,074,325 18,217,382	10.0 20.3 25.3	71.8 73.9 75.5	22,823 101,179 27,647	730,105 2,624,805 332,863	29,343 82,948 19,101	1,856,628 2,136,369 477,006															
CleveDetroit Chicage Southern Western	8 15 11 12	10,485,380 22,258,500 5,291,260 8,491,900	307,433 21,584 162,774	4,609,790 9,564,548 2,234,458 2,959,202	16.3 4.8 29.7	73.8 72.6 78.3	18,153 799 6,511	723,364 34,068 67,705	52,197 49 9,234	1,459,128 8,146 210,356															
Total	80	108,587,670	1,626,958	46,659,705	17.7	73.8	177,112	4,512,910	192,872	8,147,627															

^{*} Revised.



Process... Calcining and Sintering in continuous GAS Kilns at RCA Victor Division

product... Non-conducting, magnetic, compacted cores, sintered after initial calcining

The RCA Victor Division of RADIO CORPORATION of AMERICA, in Camden, New Jersey, utilizes the productive flames of GAS in calcining and sintering operations.

Continuous Gas-fired kilns, installed in 1949, provide the exact temperatures RCA Victor requires for calcining and sintering these cores. Careful control of temperatures and products of combustion are essential to these processes, but the ease of such control afforded by GAS and Modern Gas-fired Industrial Equipment is only one reason for the extensive use of GAS by Industry. Here are some others:

- Modern Gas-fired Industrial Equipment fits readily into production lines
- GAS affords precise temperature control
- GAS is versatile—Gas performs virtually every heat processing operation regardless of temperature range



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Loading the Gas-fired continuous kiln, built by Selas Corporation of America, at Camden, New Jersey plant of RCA Victor Division.



Controls on Gas-fired Industrial furnaces and equipment are positive, affording precise temperature determination and control throughout production line cycles.

Get the facts on GAS for All Industry from your Gas Company Representative. Call him today.

See the A.G.A. Combined Exhibit at the Annual Convention of the American Foundrymen's Association at Atlantic City, May 1-7.



AMERICAN GAS ASSOCIATION, 420 LEXINGTON AVENUE, NEW YORK 17, N. Y.

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covers only requirements to 1954. Constant review and analysis of increasing needs are being made as to the supply required past that

Industry Controls This Week

Inventory Controls-Inventory controls have been removed from grain and superfine corundum, lava grade block talc and rutiles. Also deleted from NPA Reg. 1 were sulfuric acid and benzene.

Iron Ore-CPR 169 raises ceiling prices on merchant iron from Lake Superior district of Minnesota, Wisconsin and Michigan-75¢ per gross ton. Ceilings for standard ores delivered at lower Lake ports are also

Prices-Del. of Authority 75, makes regional OPS offices responsible for pricing of commodities covered by CPR 161

Radio, TV-Amend. 1, Rev. 1, GOR 5 lifts price controls from radio and TV equipment.

Sales to U. S .- Amends. 1 and 2, Rev. 1, GOR 2 temporarily suspends requirement that defense contractors state their ceiling prices when making bids, and outlines method of determining ceiling prices for f.o.b. sales to the government.

Steel-Dir. 5, M-46 and Dir. 3, M-46A permit use of up to 500 tons of finished carbon conversion steel for approved gas and petroleum construction projects. Amend., Dir. 3, M-6A removes warehouse inventory restrictions on stocks of secondary and imported steel products and cold rolled sheet and strip. Amend. 6, CMP Reg. 1 allows certain producers to convert outstanding steel orders prior to shipment of steel by adding the suffix B-5.

Terneplate-Amend., M-24 removes restrictions on end-use of terneplate.

Tin-Dir. 5, M-25 and Revoc., Dir. 4, M-25 permit temporary unrestricted use of cans made from emergency purchases of tinplate. Amend. 14, CPR 31 sets up interim ceilings on imported

Tires-SR 118, GCPR lowers ceiling price on second-line, low-pressure tires.

Trucks - Amend. 34. GCPR lifts price controls on sales of used trucks not acquired for sale, providing resale price is not higher than original purchase price.

Tungsten, molybdenum - A m e n d, M-81 removes allocation controls on pure tungsten and pure molybdenum.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representative.

Spare parts, tools and accessories for guns, gun mounts and missile launchers, 180,000, Vickers, Inc., Waterbury, Conn. Spare parts, tools and accessories for guns, gun mounts and missile launchers, 220,000, Ford Instrument Co., Long Island City, N. Y., Charles Arcularius.

Spare parts, tools and accessories for guns, gun mounts and missile launchers, 30,000, Army Corp., Brooklyn, John V. Stocks.

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\$0,000, Army Corp., Brooklyn, John V. Stocks.

Spare parts, tools, etc., for repair, overhaul, and maintenance of guns, gun mounts and missile launchers, 500,000, Vickers, Inc., Detroit, R. M. McCabe.

Spare parts, tools and accessories for guns, gun mounts and missile launchers, 500,000, General Electric Co., Washington.

Spare parts, 125,000, Arma Corp., Brooklyn, John V. Stocks.

Gun, machine caliber .50 M3 aircraft, basic parts, var amts, 43 itml. 601,886, Colts Mfg. Co., Hartford.

Repair parts for diesel engines, 14973, \$58,662, The Cooper-Bessemer Corp., Mt. Vernon, Ohio.

Repair parts, 2547, \$46,465, Todd Shipyards Corp., Elmhurst, Queens, N. Y.

Repair parts for diesel engines, 13504, \$40,103, American Bosch Corp., Springfield, Mass.

Repair parts for switchboards, 4930, 67,773, ITE Circuit Breaker Co., Phila-

Automotive spare parts, 45798, \$87,924, Diamond T Motor Car Co., Chicago.
Automotive spare parts, 12600, \$56,075, Wisconsin Motor Corp., Milwaukee.
Hull, assy, M47, 500, \$11,236,969, Continental Foundry & Machine Co., East Chicago, Ill.

Chicago, Ill.
Primer, percussion, 2885600, \$320,301,
National Sewing Machine Co., Belvidere,

Ill.
Replacement parts tank automotive,
\$34,141, Rocklin Mfg. Co., Sloux City, Ia.
Shell, HE, 155MM, M107, 270000, \$5,300,100, International Harvester Co., West
Pullman, Ill.
Conversion kits, 60MM mortar M2 to
M19, \$642,176, The Bell Machine Co.,
Oshkosh, Wis.

Insignia, collar, U.S., 2464000, \$105,681, & R Metal Products Corp., New York.

Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.") Procurements reserved for small business are starred (*).

New York Chemical Procurement District, New York.

Retainer plug, 750 ea, CML 30-070-53-10B, Sept. 29. Clap frame, 1100 ea, CML 30-070-53-10B, Sept.

Pin, 4125 ea, CML 30-070-53-10B. Sept. 29. Head safety, 6600 ea, CML 30-070-53-10B. Sept. 29. Sept. 29. Nut wing, 4000 ea, CML 30-070-53-10B, Sept.

Clamp valve stem, 750 en, CML 30-070-53-10B,

Valve check, 19750 ea, CML 30-070-53-10B, Sept. 29. Sept. 29. Plug filling, 3900 en, CML 30-070-53-10B, Sept.

Small Arms Ammunition Center, St. Louis. Cartridge, ball revolver cal. 38, 419000, Ord-23-196-53B, Oct. 6. Cartridge, ball cal. 22 Hornet, metal jacket, 60,000, Ord-23-196-53-1B, Oct. 6.

Navy Purchasing Office, Washington. Axes, broad, single bit, 17200, 428Q, Oct. 6. Sprayers, liquid insecticide, 1400, 6696-B, Sept.

Mattocks, pick, 94300 6690-B, Sept. 29. Electronic Supply Office, Building B-2, Great Lakes, Ill.

Connector plug, 6000 ea, 710279Q, Sept. 22.

Overhead lighting fixtures, 16042 ca, 3W-17815-N, Oct. 6. General Services Administration, Washington,

District Corps of Engineers, Philadelphia. Cylinder, oxygen, 2645, Eng-36-109-53-63B, Sept. 24.

Marine Corps, Procurement Section, Washing-

Grinders, electric, 40 ea, 95B, Sept. 26. Grinders, electric, pedestal, 50 ea, 95B, Sept. Grinders, electric, bench type, 300 ca, 95B, Sept. 26. Sept. 26. Grinders, electric, portable, 250 ea, 95B, Sept. Sanders, portable, electric, 400 ea, 95B, Sept.

Sanders, portable, electric, belt type, 400 cm, 95B, Sept. 26. Sanders, portable, electrick disk type, 100 ea, 05B, Sept. 26.

95B, Sept. 26. Cans, corrugated, 5925 ca, 184B, Sept. 26. Blades, hacksaw, 16000 ca, 123B, Sept. 26. Cleaner and tester, spark plug, 200 ca, 123B, Sept. 96.

untersinks and drills, 2800 ea, 123B, Sept.

Construction-

Steel Inquiries and Awards

Fabricated Steel awards this week include the following:

clude the following:
4000 Tons, Omaha, city auditorium, Gate City Iron Works.
1415 Tons, Broadview, Ill., Indiana Harbor Belt separation to American Bridge.
500 Tons, Texas City, Texas, chemical plant for Monsanto Chemical Co., through Stone & Webster Engineering, Inc., to Bethlehem Steel Co., Bethlehem, Pa.
475 Tons, La Salle County, Ill., bridge section 76FX-VF, to Illinois Steel Bridge Co.
386 Tons, State of Illinois, bridge, section 37F, Cook County, to American Bridge.

37F, Cook County, to American Bridge.
240 Tons, Hillside, Ill., Wolf Road separation to American Bridge.
235 Tons, Fillside, Ill., Illinois Central grade separation to American Bridge.
185 Tons, Chicago, Westchester Blvd., separation to American Bridge.
180 Tons, Sioux City, Ia., Alert Hangar USAF, to Butler Mfg. Co.
175 Tons, Fond Du Lac, Wis., bridge project FO3-1/36/ to Worden Allen Co.

Co.
Tons, Clark County, Ind., bridge to
Central States Bridge and Iron Co.
Tons, Shannan County, S. D., bridge
F-455/9/ to Eggir-Scudder.
Tons, Allen and Lake Counties, Ind.,
bridges to Allied Structural Steel Co.

Fabricated steel inquiries this week in-

clude the following:

876 Tons, Northampton County, Pa., divided highway, (2) concrete deck I-beam bridges, (2) rigid frame bridges, (1) box culvert, (1) concrete bridge. (1) plate girder bridge, (2) concrete deck I-beam bridges, and connecting ramps and service roads. Pennsylvania Dept. of Highways, Harrisburg, Pa. Bids to Sept. 19, 1952.

Reinforcing bar inquiries this week in-clude the following:

436 Tons, Northampton County, Pa., divided highway, (2) concrete deck Ibeam bridges, (2) rigid frame bridges, (1) hox culvert, (1) concrete bridge, (1) plate girder bridge, (2) concrete deck I-beam bridges, and connecting ramps and service roads. Pennsylvania Dept. of Highways, Harrisburg, Pa. Bids to Sept. 19, 1952.
246 Tons, Allegheny County, Pa., retaining walls, ramp, and grading, paving and constructions of foundations. Pennsylvania Dept. Highways, Harrisburg, Pa. Bids to Sept. 19, 1952.
123 Tons, Lowell, Mass., steel bridge superstructure and approach slabs over Merrimack River near Hunt's Falls. F. D. Sabin, Cambridge, Mass., district engineer. Completion date is June 30, 1954.

Industrial Briefs

Companies Formed—DIAMOND AL-KALI CO. has formed 2 new subsidiary companies to handle its increasing volume of export sales. Both concerns are incorporated in Delaware.

Program Completed—The completion of a major development program in the warehouse building of RESERVE TERMINALS CO., Cleveland, makes available 112,000 cu ft of additional storage space.

Record Established—Last month, 3,-974,477 gross tons of iron ore were moved by the PITTSBURGH STEAM-SHIP FLEET'S carriers, setting a new record.

Begin Operations—CONTROL ENGINEERING CORP., has commenced operations in its new enlarged head-quarters at 560 Providence Highway, Norwood, Mass.

Direct Representation — JENNISON-WRIGHT CORP., Toledo, now has an office at 40 E. 49th St., N. Y. They will be represented by Daniel W. Thomson.

New Plant—H. I. THOMPSON CO. has formed a Canadian firm which is building a new plant in Canada to provide insulation products for Canadian Aircraft Manufacturers.

Offices Established — SALEM-BRO-SIUS, INC., has established offices at 248 Fourth Ave., Pittsburgh.

New Division—AMERICAN CAN CO. has established a new Packing and Materials Handling Div. to consolidate the materials handling; packing and shipping functions of the general manufacturing department.

Foundry Erected—A new foundry and office building has been erected by MIR-O-COL ALLOY CO., INC., at 340 No. Ave., 21, Los Angeles, to expand its present production of precision steel and alloy castings.

Status Changed — AMERICAN MA-CHINE & FOUNDRY CO., recently accorded divisional status to its electronic subsidiary. The former Transducer Corp., Boston, now becomes the Electronics Div. Stock Exchange—PRECISION CAST-INGS CO., INC., Fayetteville, N. Y., has acquired the Bradley-Edlund Corp., Cortland, N. Y., through an exchange of stock.

Acquisition—E. C. Atkins & Co., has passed into the hands of BORG-WARNER CORP., Chicago, and will now be known as the Atkins Saw Div.

Capacity Increased — The electrical generating capacity of the nation's railroads has increased 900 pct in the past 10 years, according to a study made by the GENERAL ELECTRIC CO.

Stock Purchase Plan—BRIDGEPORT BRASS CO. has introduced an employee stock purchase plan which will enable an employee with the company for 1 year or more, to purchase company stock on a small, regular installment basis through payroll deductions.

Powerful Engine—WESTINGHOUSE ELECTRIC CO. has developed and placed into production what it calls the world's most powerful qualified turbojet aircraft engine.

Loan Granted — JACQUES BRASS SPECIALTIES CO., INC., has been granted a loan of \$115,000 by Reconstruction Finance Corp. to enable it to increase its production of aircraft parts for the Air Force.



"I certainly wish you'd get that grievance procedure worked out in the plant."

Purchased — CECO STEEL PRODUCTS CORP., Chicago, has purchased 13 acres in Broadview, Ill., for planned expansions.

New Quarters—The Philadelphia district sales office of LEEDS & NOR-THRUP CO., has moved to new and larger quarters at 444 N. 16th St, Philadelphia.

Expansion—First step in an expansion program which will lift steelmaking capacity of INLAND STEEL CO. by 20 pct was completed recently when one of four new openhearth furnaces was put into production at the company's Indiana Harbor Works in East Chicago, Ind.

Opportunity Knocks—THE BUREAU OF AERONAUTICS, Dept. of the Navy, has job openings for engineers. These involve research, development, and the administration of engineering programs to solve Navy aeronautical engineering problems.

Completion—A new building located at 125 Manchester Place, Newark, which is to house Bart Mfg. Corp., was completed recently by BART-MESSING CORP., Belleville, N. J.

Contract Awarded — LURIA ENGINEERING CO., Bethlehem, has been awarded a contract by the Alabama Great Southern Railroad Co. for a new steel car shed at their railroad yards in Irondale, just outside Birmingham, Ala.

Named Distributor — Komp Equipt. Co., Ltd., Miss., has been named a distributor, for ALLIS-CHALMERS MFG. CO.

New Plant—A house-warming was held last week at the newly-opened plant of KSM PRODUCTS, INC. The trim plant, at Merchantville, N. J., is turning out a variety of arc welding studs.

Out of Production—The blast furnace at the South Chicago plant of REPUBLIC STEEL CORP. was taken out of production September 7 for the purpose of relining. It had produced nearly 3 million tons of iron since being blown in.

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STEEL: Is Expansion Wisdom or Folly?

MSA plans big cash outlay to aid European steel industry at time when steel surplus shows signs of growing up . . . MSA says it won't stress crude steel but balanced product mix.

Mutual Security Agency's plan to invest millions of dollars into a titan project to expand and balance the product mix of the Free European steel industry is either the ultimate in folly or wise.

R.

Some European industrialists, who are not saying a derogatory word about this vast American project, are viewing the planned MSA expenditure of \$688 million to modernize and expand steel plants as foolish. They say it is odd that MSA is considering 117 separate projects at a time when European producers wince at the prospects of a steel surplus getting more pronounced.

Countering this argument, MSA told the THE IRON AGE that it plans only to balance product mix and lay minor emphasis on production of basic steel.

MSA's Defense—As an example of what it was trying to do, MSA wrote IRON AGE the following:

"For example: At time the Mutual Security Plan got rolling (1947) there were in Germany facilities for producing, if operated to capacity, about 16.5 million tons of unfinished steel per year. However, sufficient stocks of ore, coke, and other purchased materials were lacking. Much of this capacity was down for various reasons.

"Extensive repairs were necessary, relining had to be done, etc. Key to this situation is that nearly all of the finishing facilities were wrecked. Practically all German finishing facilities needed rebuilding. There existed then, and still exists today to a lesser extent, an imbalance of product mix. During the past 5 years of Marshall Plan operation, the emphasis has been on rebuilding finishing facilities.

"Basic productive capacity also has been rebuilt to some extent, so that basic capacity is now about 18.5 million tons, but capacity of finished steel still is much less. Germany's capacity for finished steel still is only about 12 million tons. It is finishing facilities that we are trying to build up.

"That is what is being emphasized in the current Mutual Security Program over there—not furnace or openhearth capacity. There is also the question of relocating some facilities. In some cases we have relocated and reconstructed entire furnaces because it was not practical to rebuild finishing facilities at the original sites. We moved some furnaces to new locations for economic reasons and then built new finishing facilities."

Output Goals Slide—IRON AGE's European correspondent reports some steel plant sales managers overseas are recommending production cuts. German goal in steel output this year was 16.5 million tons. It has been revised downward to 15.4 million and may not reach 14.7 million. Belgoluxemburg cuts range from 8 to 10 pct.

An important Luxemburg member of the Schuman Plan board gave IRON AGE the following reasons for the altered steel supply.

- (1) America bought no important tonnages of European steel—not even during the strike.
- (2) The post-war period in Europe imposed on steel mills harsh workloads of war reconstruction work. This demand has now been covered.
- (3) Britain's steel industry intruded forcefully into export market. Others did the same.
- (4) Metalworking industries here report declining markets.

Distribution-

STEEL: Finished Shipments Totals in May

As Reported to the American Iron and Steel Institute

		CUMME	MI MON	IIM		1	DAIL	IIII3 II	EAR	
PRODUCTS	Carbon	Alloy	Stain- less	Total	Pct of Total Ship- ments	Carbon	Alloy	Stain- less	[Total	Pct of Total Ship- ments
Ingots	73.327	22.747	2,222	98,296	1.7	307,444	126,353	9.786	443,583	1.4
Blooms, slatis, lilliets, tube rounds, sheet	10,061	44,141	6,666	90,290	1.1	307,444	140,000	0,700	410,000	
bars, etc	155,876	48,075	2,377	206,328	3.5	763,426	250,810	8,658	1,022,894	3.2
Skelp	11,131			11,131	0.2	52,461			52,461	0.2
Wire rods	70,328	1,224	506	72,058	1.2	331,433	7,352	3,187	341,972	1.1
Structural shapes	353,708	7,402	1	361,111	6.1	1,982,078	27,930	37	2,010,045	0.3
Steel piling	20,922			20,922	0.3	110,410			110,410	0.4
Plates	605,451	28,613	2,597	636,661	10.7	3,312,677	172,131	12,110	3,496,918	11.0
Rails-standard	120,970	26		120,996	2.0	657,650	130		657,780	2.1
Rails-all other	12,002	11		12.013	0.2	58,979	48		59.027	0.2
Joint bars	10,123			10,123	0.2	54,228			54,228	0.2
Tie plates	33,605			33,605	0.6	184,789			184,789	0.6
Track spikes	9,274			9,274	0.1	47,118			47,118	0.2
Wheels	28,323	130		28,453	0.5	189,064	213		159,277	0.5
Axios	16,170	25		16,195	0.3	79,606	150		79,786	0.3
Bars-hot rolled	563,213	172.043	4,319	739.575	12.4	2.842.557	923,554	21,874	3,787,985	11.9
	158,006			158,006	2.6	820,276	923,004	21,014	820,278	2.8
	126,520	00.408	4,641		2.7	719,324	152,052	22,958	894,332	2.0
Bars-cold finished		29,465	4,041	160,626					61,878	0.2
Tool steel	1,731	8,456		10,187	0.2	10,924	50,952			
Standard pipe	213,600	37	1	213,638	3.6	1,148,927	206	6	1,149,141	3.6
Oil country goods	133,967	13,040		147,007	2.5	681,663	85,788		747,451	2.4
Line pipe		40		238,722	4.0	1,410,152	119		1,410,271	4.4
Mechanical tubing		26,168	632	82,949	1.4	303,917	125,901	3,115	432,933	1.4
Pressure tubing		3,614	1,298	40,372	0.7	167,196	18,765	5,351	191,312	0.6
Wire-drawn	205,495	5,137	3,135	213,767	3.6	1,174,072	25,877	14,741	1,214,890	3.8
Wire-nails, staples	56,344			56,344	0.9	325,682		20	325,702	1.0
Wire-barbed, twisted.	21,686			21,686	0.4	116,042			116,042	0.4
Wire-waven fence	32,187			32,187	0.5	171,021			171,021	0.6
Wire-bale ties	8,638			6,638	0.1	41,988			41,988	0.1
Black plate				74,053	1.2	458,122			456,122	1.4
het dipped	100,373			100,373	1.7	583,829			583,829	1.8
Tin plate-electrolytic	233,770			233,770	3.9	1,283,788			1,293,788	4.0
Sheets-hot rolled		18,344	2,645	522,866	8.8	2,758,847	102,691	12,755	2,874,293	9,1
Sheets-cold rolled	671,896	7,140	9,775	688,811	11.6	3,452,998	37.381	48,895	3,539,274	11.2
Sheets-galvanized	182,938	40		182,978	3.1	849,152	40		849,192	2.1
Sheets-other coated	18,647			18,647	0.3	95,352			95,352	0.8
Sheets-enameling	15,807			15,807	0.3	72,620			72,620	0.1
Electrical sheets, strip		46,898		55.051	0.9	40,077	234,397		274,474	0.5
Strip-het rolled		2,782	170	155,829	2.6	809,262	14,338	2.067	825,685	2.0
Strip-cold rolled,				140,395		708,779	8,888	58,867	776,534	2.4
TOTAL	5,456,488	443.115	47.847	5.947.450	100.0	29,147,930	2.346.066	224,445	31,718,441	100.6

During 1951 the companies included above represented 98.5 pct of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.

Drive for More U. S. Defense Money

Program started to divert more U. S. defense spending to Canada's small industries . . . Expanded steel output puts bite on scrap supply . . . Tungsten eases—By F. Sanderson.

Canadian industrialists and Defense Production Dept. authorities have started a drive to obtain a larger slice of U. S. arms and defense orders. The program is concentrated on items that Canadian manufacturers can produce as cheaply as American firms.

Canadian Commercial Corp. and the Defense Dept.'s Small Industries Div. are responsible for selecting the companies to produce equipment needed for U. S. defense. Canada's ability to turn out these goods will be brought to the attention of U. S. procurement agencies through Canadian government channels.

All Services - Concerning the campaign to obtain U.S. orders, F. W. Hore, chief of the Defense Production Dept's. Small Industries Div. said: "Initially, the commodity list being established is for those items required by the U.S. Air Force, but it is intended that this listing will be extended as quickly as possible to cover items required by the U.S. Army and Navy. Having readily available a list of commodities that can be produced competitively and known sources of supply should greatly facilitate our efforts in selling Canadian defense goods in the U. S."

The U. S. placed about \$292 million worth of defense orders with Canadian plants in the 12 months ended June 30, but these were mainly large government-to-government orders for guns and aircraft. So far Canadian small production plants have not done too well in obtaining U. S. orders.

Scrap Shortage—With a sharp jump in steel production resulting from expanded facilities of major steel plants in the closing months of this year, there is a possibility that Canadian mills wil have to contend with a serious shortage of iron and steel scrap. Following a meeting of the Canadian Scrap



FINISHING UP: Steel Co. of Canada, Ltd., puts final touches on "D" Furnace, fourth blast furnace at the company's Hamilton Works.

Iron & Steel Committee last week it was predicted that steel plants may run short of scrap steel during the winter unless the scrap flow speeds up this fall.

The Committee, representing major steel producers, foundries and scrap dealers, is keeping a close watch on scrap movements so that the drive for industrial and farm scrap can be intensified should the supply situation deteriorate.

Steel industry representatives stressed the fact that dormant steel equipment should be scrapped and sold to dealers who have the equipment and know-how to prepare it for use by steel mills.

Capacity Boosted—Steel Co. of Canada Ltd., is speeding work on completion of its new blast furnace and openhearth furnaces, scheduled to go into production before the year-end. Dock facilities and the unloading bridge at the Hamilton works have been finished; a new battery of 83 coke ovens was completed and put in operation last May. Another battery is underway.

An openhearth building that will house four 275-ton furnaces is scheduled to go into operation in October. This will increase the company's ingot capacity to 600,000 tons a year. The company's "D" or fourth blast furnace with a capacity of 1200 tons daily is nearing completion and when in operation wil jump the rated capacity to a total of approximately 1.2 million tons a year.

The added iron and steel capacity at Steel's Hamilton works means a substantial jump in the company's requirements of both scrap and iron ore.

Hot Potato—Defense Production Dept. announced that it has resold the Emerald Tungsten mine in British Columbia to Canadian Exploration Ltd., an affiliate of Placer Development Ltd.

The government operated the mine during World War II, but after the war sold it to Canadian Exploration. With the outbreak of war in Korea, it became evident that loss of Chinese and Korean tungsten output could create a shortage for defense needs. The government then approached Canadian Exploration to resume production but the latter declined because of price and other factors. The government then repurchased the original mine.

Since the government reacquired the property, the company has found substantial additional quantities of tungsten ore on adjacent holdings.



Minimum product weight and long product service are just two important reasons why N-A-X HIGH-TENSILE steel is ideally suited for tote boxes, pallets, conveyors, lift trucks, and other

Because N-A-X HIGH-TENSILE steel has exceptional strength and durability, thinner sections can be used, yet it resists abrasion, impact, fatigue, and corrosion. N-A-X HIGH-TENSILE steel gives your equipment longer life and reduces deadweight to the minimum; you can carry a greater net load of material with no increase in the gross load weight. And N-A-X HIGH-TENSILE steel has exceptional welding and fabricating qualities - important advantages where custom-made materials-handling equipment is required.

If you are interested in better, more economical materialshandling, why not investigate N-A-X HIGH-TENSILE steel now?



GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division . Ecorse, Detroit 29, Michigan

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Stampers Show Speed in Stretch

Rush of fall orders comes after muddy going most of year...

Civilian goods curbs, steel strike had slowed production

... Steel users push to use up quotas—By R. D. Raddant.

A late surge in the waning months of 1952 can provide a brighter end to what has been a gloomy year for metal stamping companies.

Producers of stampings have had it tough all year. Severe cutbacks of most civilian users of stampings sliced into their business during the early part of the year. Defense orders did not comproduction levels for the rest of the year.

Optimism — Steel is still a big problem, but optimism prevails at most stamping plants. Those on schedules at the mills are getting deliveries. Smaller outfits that are dependent on warehouses in a ve their troubles but are finding solutions. Parent companies, for exescalator clauses that have sent wages inching up while both competition and price ceilings have combined to prevent passing on these higher expenses.

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With margins pared to the bone, stampers feel that they must pass on new steel price increases to their buyers, even in the face of such tight competitive bidding for contracts.

In some instances smaller stamping plants have had it easier over the year. Those which required longer runs have been curback more seriously than some of those specializing in short runs.

War Work Helps—Defense orders that have not been large have fitted in perfectly with the facilities of short run plants. Benefits of this nature redoubled during and after the steel strike when scarce steel was channeled to defense orders. Not all smaller plants were this fortunate, but some did find themselves in this enviable situation.

In Detroit stamping is obviously geared to the demands of the big auto plants. New model changes that are coming up or already in process will generally be handled without much if any interruption of business.

The new stampings required for 1953 models were let out well in advance so that new dies and tools are ready for new requirements. To the stampers, it is described as a running change without significant downtime.

Looking Ahead — Demand for stampings will continue strong through the remainder of the year. For 1953 the outlook is uncertain. If quotas continue harsh on civilian goods, the business will be lethargic.

If quotas are lifted or raised substantially, business may be a lot better. Meanwhile, they are enjoying the present prosperity while it lasts.

	Automotive Prod	uction	
	U. S. and Canada Co.	mbined)	
WEEK ENDING	CARS	TRUCKS	TOTAL
Sept. 13, 1952	109,587*	28,414*	138,001*
Sept. 6, 1952	90,885	20,210	111,095
Sept. 15, 1951	105,293	30,857	136,150
Sept. 8, 1951	80,276	22,948	103,224
*Estimated		Source: V	Vard's Reports

pensate. Then came the steel strike with disastrous results to large users of steel.

Keeping Busy — But now that steel is returning to a respectable supply, stampers have all the orders they can handle. Some are scheduling overtime and some are even considering second shifts. Sounds of steady production are heard now where only the intermittent thud of the presses was heard recently.

The reason for the sudden activity is that strike-hit steel users are driving hard to use up their production quotas before the end of the year. Their aim is to fill the production vacuum caused by the steel famine.

This is particularly true among suppliers of stampings for the automotive industry. It is pressing all its manufacturing facilities and those of its suppliers for peak ample auto plants with their vast facilities, have helped out in critical

While the immediate outlook for stampers is good, a number of problems cloud the horizon. In the first place, competition is the keenest it has been in years. Facilities were built up for production levels that have not been reached and may not be reached for some time. Bidding for big contracts is so competitive that ceiling price is an almost forgotten term in the trade.

Going Up—Labor costs are high and going higher. The high cost of labor is forcing bigger companies, where the output will justify it, into higher degrees of mechanization. Progressive dies are becoming necessities. Iron claws and other mechanical devices are replacing human hands.

Many larger plants are under

DIES: Chrysler Tries Plastics

Reveals successful use of plastic draw die in 100-ton press to form truck cowl panels . . . Material is thermosetting liquid phenol . . . Production tests now underway.

The first plastic die to be used with success in the automotive industry was disclosed last week at Chrysler.

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H. L. Weckler, Chrysler vicepresident and general manager, said that a 100-ton press with plastic draw die has already turned out several hundred steel cowl panels for Dodge trucks. Production tests are underway at the company's Nine Mile Press Plant.

It has been no secret that plastic dies have been under study for some time. Advantages in cost, weight saving, machining and construction time have been evident if a suitable plastic die material could be formed.

In spite of the apparent success of Chrysler's plastic die, it is still questionable if a plastic die material will be suitable for the rapid and long production runs required in the automotive industry, some observers say.

Short Runs—There is no question, however, that plastic dies can be the answer to short runs or low production requirements. Chrysler's first adaptation of the plastic die for truck production is significant in that regard. However, improvements are sure to come and the extent that plastic may replace steel in dies is anybody's guess.

Chrysler's die plastic is a thermosetting liquid phenolic material. It has previously been used with success in the aircraft industry for stainless steel and aluminum stampings.

Half of the die was formed by pouring cold liquid plastic into a plaster mold of the truck cowl side panel. With a coating of wax to simulate the thickness of the steel, the same mold was used to cast the second half.

This plastic generates its own

heat and hardens the die by its own chemical reaction. Curing requires less than 24 hours' exposure to infra-red lamps.

These are the factors that give the plastic die its advantages: Its initial cost is much lower. Its production time is less than 3 weeks, compared with 15 for a steel die. No machining is required after formation.

Lightweight Diesels in Production

Deliveries to the U.S. Navy of Packard's newest lightweight diesel engine began this month as the result of a speedy 18-month development and production program.

The diesels, which Packard claims are the lightest weight of their type in the world, take up \$90 million

of Packard's contracted \$600 million defense program.

The diesel program was launched in 1951 when Packard took on the simultaneous program of developing and tooling up for production of engines. Series 142 engines are supplied in 6, 8, 12 and 16-cylinder models ranging from 300 hp to 800 hp. Six and 12-cylinder models are now in production.

By making use of a nearly allaluminum design, Packard engines weigh 5 to 6 lb for each hp against conventional weight averages of more than 15 lb per hp.

Packard officials let it be known that this weight economy will have a strong bearing on plans for future auto engines. Another factor in the Packard diesel is interchangeability of a large number of parts on different engines in the series. This accomplishes both economy in production and simplicity in servicing.

Packard officials indicate that the engine's commercial possibilities will be fully explored when defense requirements are filled.

THE BULL OF THE WOODS

By J. R. Williams



Latrobe

- of standard process tool steels with "Desegatized" quality.
- If you are not using "Desegatized" Steels, Latrobe offers you a simple, yet convincing, method of checking the steels you are using against "Desegatized" quality.
- Ask your Latrobe representative for details.

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Latrobe Steel Company, Latrobe, Pa.

Sole Producers of Desegatized Steels

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This Week in Washington

Taft-Hartley Law Is Here to Stay

Candidates may promise anything but Congress won't vote any but minor changes to labor law . . . Single service procurement ruling . . . OPS pass-throughs assailed—By G. H. Baker

The Taft-Hartley labor law is on the books to stay.

Take it from Rep. Graham A. Barden, D., N. C., that the new Congress will not ditch the contested labor-management law, regardless of what individual candidates may threaten.

This does not mean that the law may not be amended during the next 2 years. It's entirely possible that minor changes may be voted. Sen. Robert A. Taft, D., Ohio, is on record as favoring certain revisions to his own handiwork.

Slim Chance—But the possibility of major changes—and certainly of repeal—now may be dismissed as extremely slim. The legislative support necessary to bring this about is lacking.

And Barden knows what he's talking about: His views are significant in that they carry the full weight of his position as chairman of the House Labor Committee. It is considered a near-impossibility for any important legislation lacking his approval to make any important headway in the legislative mill.

"Nothing Better" — Barden defends in particular that portion of the Taft-Hartley law which permits the government to block for 80 days any strike involving a national emergency. He knocks down Gov. Adlai Stevenson's proposal to drop this provision by stating flatly that "no better solution" has been offered. He comments that this is a political year, and "sometimes political enthusiasm prompts the making of proposals that don't always work out."

Irony of this situation—an important Democratic congressional leader applying the current Democratic jingle "Don't Let 'Em Take It Away!" to a law passed by the only Republican Congress of the past 20 years—is causing many a chuckle in Capital corridors. (Taft-Hartley law was passed over President Truman's veto in 1948, when the Republican party held majorities in both the Senate and the House.)

Pooling Procurement—The long-awaited move by the military establishment to begin "single-service" procurement of such common products as hardware items and motor vehicles is finally getting under way.

Defense Secretary Lovett's new supply directive compels the Army, Navy, and Air Force to pool their buying and warehousing operations in all possible cases. And the directive specifically jars the Air Force out of its recent dream of setting up its own supply organizations apart from Army and Navy supply functions.

CAR WORKS

"This was the only way we could meet our car production quota with the materials we had."

(Lovett says "no additional independent or expanded supply facilities for common-use standard stock items of supply shall be created without prior approval by the Secretary of Defense.")

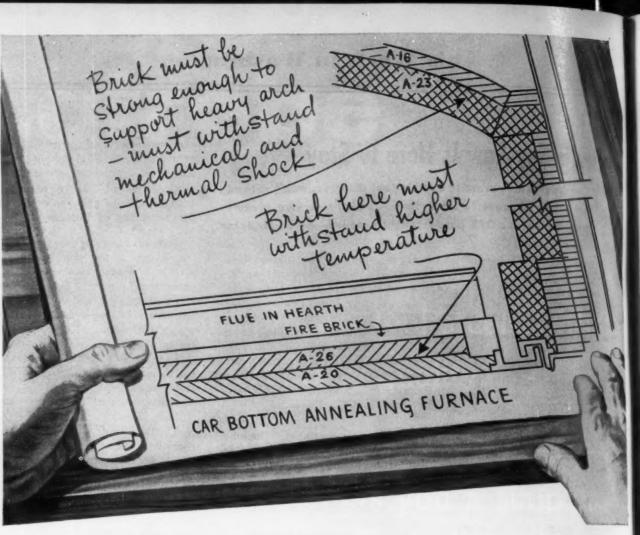
Rash of Inspections—Duplicate inspections of the same materials also is to come to an end. Munitions Board admits it has received many complaints about this practice from business organizations which deal with the Defense Dept. Up to now, it has been a common sight in many plants to see identical inspections of the same materials conducted by representatives of two or more military services.

Rep. Herbert C. Bonner, D., N. C., chairman of a House subcommittee set up to prod the military services into more efficient
buying habits, believes the Pentagon is finally becoming aware of
the need for chopping off the military supply services that compete
with each other. But he notes that
this state of awareness is not being translated into terms of action at any rapid rate.

"Absorption" Order—Businessmen visiting the Office of Price Stabilization in quest of relief from the cost-price squeezes being worked against them by control orders say the label "absorption order" should be applied to General Overriding Regulation 35, the recent (Sept. 10) relief ruling issued by OPS as a "pass-through" order.

Fabricators, in particular, say they will be lucky to pass on 50 pct of the higher prices they are now paying for steel, copper, and aluminum. And OPS has taken the position that manufacturers must absorb totally the higher prices being paid for labor, transportation, and materials other than steel, copper, and aluminum.

No pass-through of the higher costs involved in these categories is currently permitted by OPS, and no immediate relief is in sight.



Which insulating fire brick would you use?

Every furnace poses its own problem in insulating fire brick selection. While one prime requirement may sometimes outweigh all others, usually you have to choose a brick to satisfy a *combination* of demands. This applies even to different areas within a single furnace as illustrated above.

This car bottom annealing furnace is a good example of the "right brick" used in the "right place." Here, the linings are exposed to considerable mechanical abuse and must withstand the thermal shock of frequent door openings and cold loads. The weight of the long arch span calls for a strong brick.

All these conditions recommend Armstrong's A-23 Fire Brick for the furnace lining. Of the six brick in the Armstrong Line, A-23's best meet the demand for low thermal conductivity and great mechanical strength. Like all six of Armstrong's Fire Brick, they are strong, yet light in weight, and offer unusually

high resistance to shrinking and spalling.

Armstrong's A-26 Fire Brick are used under the flue in the hearth because of the higher temperatures encountered. A-20 Fire Brick are used as back-up insulation here. A-16's serve as back-up insulation behind walls and arch.

Every brick in Armstrong's Line is formulated to give you the best possible balance of physical properties. The brick choice depends on the job. That's why it's a good idea to call on Armstrong whenever you're faced with a refractories problem. An Armstrong engineer will be glad to advise you in selecting the best brick for your specific job . . . perhaps help you improve unit performance. Next time you have a furnace insulating problem, just call your near-by Armstrong office or write direct to the Armstrong Cork Company, 4909 Mulberry Street, Lancaster, Pennsylvania.



ARMSTRONG'S INSULATING REFRACTORIES

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THE IRON AGE

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DEFENSE: Are We, Ain't We at Peak?

Government men lock horns on whether defense spending has hit its peak... Fowler says job's half done... Steelman says next June's the peak, others differ—By A. K. Rannells.

Higher echelons within the government are at sixes-and-sevens among themselves, unable to agree on whether defense spending has hit its peak—and, if it has, what to do about it.

Early in the mobilization program, the peak of government spending had been forecast for second-half 1951. Threats of consumer goods shortages brought a revision and stretch-out of the defense program and a new peak date—early 1952.

Mid-1952 was the date adhered to by Charles E. Wilson at the time he quit his job as Mobilization Director. Admittedly, the steel strike may have postponed this date somewhat.

"No Letdown"—Henry H. Fowler, now the Mobilization Chief, holds that the nation still has a long way to go to reach defense goals. He says the job is only one-half completed, that "efforts to reach this goal must be maintained—and, wherever possible, increased."

While some of the worst shortage threats are behind, he contends that the job ahead may be even more difficult because it is natural to dispose of the easiest problems first. (This is not entirely logical because retooling a civilian industry for war poses fantastic obstacles.)

Fowler concedes that most of the capacity expansion goals have been reached or are in sight. But he insists that a decision must be made whether to turn this additional production into guns or butter.

Some members of the Administration family, such as Robert C. Turner of the Council of Economic Advisers, believe that defense spending has hit the top, even though the delivery volume will obviously continue to climb

for still another several months.

Opinion Differs—This is at considerable variance with opinions of other key figures, including the President himself. They say that peak defense spending will not arrive until mid-1953.

Dr. John R. Steelman, assistant to the president and for a time the acting Defense Mobilizer, told the White House in June in a confidential report that deliveries of military hard goods, including ammunition, tanks, other vehicles, and planes, are only 75 pct or so of scheduled production. The 100 pct point would not be reached, he said, before next June.

Adding to the confusion, the Pentagon has been sending up trial balloons, talking of further reduction in the military budget for next year. No sound figures have been given. But about \$5 billion is the most talked of amount.

Some have interpreted this as meaning a "stretch-out of the stretch-out"—in other words projecting the completion date of the preparedness program beyond the present target of 1954-55.



Downgrade—Others are just as quick to point out that military spending for expansion of production and other facilities are on the downgrade.

They estimate that lower requirements for this purpose next year would not necessarily mean any cutback in 1953-54 procurements.

Overlooked is the fact that a great deal of the so-called military spending actually represents only commitments because of the lag time between orders and production. In some cases authorization to spend has been misconstrued as money actually spent or obligated.

Also, a substantial portion of actual spending and deliveries to date and for some time to come has been and will be for the purpose of filling pipelines and stocking depots. There would not be recurring expenditures except in case of all-out mobilization or war.

Doubletalk? — There are those who accuse the Administration of talking out of both sides of its mouth. Proposals for now putting the brakes on certain programs, such as machine tool production, are cited as basis for this belief.

Meanwhile, there are still others who are cynical enough to say that the government is in the position of having to manufacture a new emergency.

But regardless of whether peak spending is here or is yet to come, it is a fact that some agencies, including the Commerce Dept., are hard at work studying ways and means for keeping expanded industrial facilities busy when defense demand lets down.

Another Draft Call in November

Employers of draft-eligible men are advised by the Defense Dept. to prepare for another big selective service call in November. Draft officials are planning to issue "greetings" to 47,000 men to start their service in the Army during the month. Air Force, Navy, and Marine Corps are not requesting any of the draftees.

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"Karbate" pumps and piping resist sulphuric and hydrochloric acid attack ... protect solution from contamination.



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THE IRON AGE

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Pipe Makers Feel Pig Iron Boost

Western pressure, plumbing pipe manufacturers expected to pass on cost increases . . . Area's two major producers raise prices . . . Little effect on foundries—By T. M. Rohan.

Hardest hit by last week's \$2.50 ton pig iron increase were pressure and plumbing pipe manufacturers who all expect to raise finished prices a like amount.

The only two major Far West pig iron producers, Columbia-Geneva (U. S. Steel) and Kaiser both made their price retroactive to July 26 as authorized. Columbia-Geneva added a new category to its foundry pig price schedule with \$55 per gross ton for under 5 pct silicon and \$55.50 over 5 pct.

Some grumbling was heard from pig consumers because the increase came largely without warning. Columbia - Geneva, unlike Kaiser, had no conditional price clauses on past sales. Most consumers had felt that it would go up in the wake of the steel strike, but not quite so high.

Foundry Unchanged-Standard foundry operations will be largely unaffected since only about 20 pct pig is used with scrap cast. Since cast is readily obtainable at belowceiling prices, this will probably continue. On close specification pressure pipe the situation is reversed with a minimum 85 pct pig charge because silicon and manganese content must be more closely controlled than is possible with volumes of cast. Other similar items made in less volume which require close control are plumbing fixtures, brake shoes,

Annual western market for pig iron is about 250,000 tons, mostly to foundries. Largest suppliers are Columbia-Geneva which sells about 10 pct of its total production and Kaiser which sells about 3 pct. A good portion of Columbia-Geneva's goes to neighboring

Pacific Coast Cast Iron Pipe Co. at Provo, Utah, one of the largest of its kind in the west. Kaiser is expected to enter the market actively when its new blast furnace starts next year.

Other western producers like Colorado Fuel & Iron Works at Pueblo, Colo., and Lone Star Steel at Daingerfield, Tex., sell mostly in their own area although C. F. & I markets some in Idaho and Montana.

No foreign pig has come to the West this year although in 1951 about 50,000 tons came in, mostly from India as ballast on ships. It undersold local products by as much as \$20 a ton. Some also came in from Chile in an emergency.

First 100 Years — Electricity stole—and powered—the spotlight in California last week. The \$1.8-billion Pacific Gas & Electric Co., costliest utility in the world, celebrated its 100th birthday. An hon-

ored guest showed up to pay his respects—Phillip Reed, General Electric Co. board chairman.

P. G. & E., which sprang from a small gas works to embrace 520 utilities and serve 205 million customers is currently adding \$15 million monthly in capacity and now aggregates 3,046,200 kw in 58 hydro and 17 steam plants. On the gas side it has delivered 1 billion cu ft in a single day this year.

It rates second in generating capacity only to Consolidated Edison of New York with 3.2 million kw. It recently successfully marketed \$75 million in stock, largest ever offered by a like utility. And P. G. & E. President, James E. Black, a U. S. Steel director, sets 1954 capacity at 4.1 million kw.

Oil Well "Conversion" — Many oil drillers are concentrating on sinking development holes rather than production units because of the shortage of oil well casing and drill pipe. Some drillers are buying odds and ends of pipe wherever they can and having it threaded and fitted in machine shops. Many contractors feel there won't be enough oil well casing to go around until the end of the first quarter.



MAKE WAY: Police clear a path for a woman worker through a picket line at Lockheed Aircraft Corp.'s Burbank, Calif., plant. Strike was called by AFL International Assn. of Machinists.

NPA Drains Water From Pool Orders

Plan for closer scrutiny of pool orders started . . . Would cut government liability and would help prevent industry from overproducing . . . Renegotiation deferred—By E. C. Beaudet.

Further indications that machine tool output is catching up with military requirements were evidenced in Washington last week. The National Production Authority made plans to scrutinize more closely pool orders placed with machine tool builders.

Situation on pool orders is at present pretty ragged. Purpose of the move: To gain a more realistic view of pool orders in the face of known military needs; cut down the government's liability to a minimum in terms of dollars, and to protect builders from producing more than military requirements call for.

New Application Form—Action came in the form of a change in procedure for making application for pool order contracts. From now on, applications or revisions of existing contracts must be made on a new form, NPAF-227. This requires builders to list the number of rated orders now on their books, the lead time required to fill an order and the minimum production lots that can be accepted.

At present the government has placed 120 pool order contracts totalling \$1.3 billion which extend through 1953. These are for general and single purpose machine tools for production of a variety of military items such as aircraft, tanks, shells, etc., and related production equipment. Of these 85 pct are rated, the rest being filled to meet future defense needs.

Increased Liability—Since most machine tools in the \$1.3 billion pool are covered by firm orders, the amount of liability assumed by the government so far has been negligible. However, this is expected to increase materially and more tools will have to be put in storage.

Some builders are now asking for extensions of their pool order contracts in order to find buyers so the government won't have to take over the liability. Reason of course is that they prefer to get full price on the equipment rather than the 82.5 pct the government allows when assuming liability.

As defense requirements lessen, new pool orders will be fewer in number, NPA said. When originally issued the purpose of pool orders was to raise the operating rate of the industry to a level sufficient to meet an all-out emergency and fill defense needs.

Falling off and stretch-out of defense demand once more poses the problem of how to keep the industry operating at a healthy rate in the event of an all-out war. However, machine tool builders were inclined to go along with the NPA's action last week. They look askance at heavy storing of machine tools by the government

which might possibly be dumped on the market to their detriment at some later date. Also the 82.5 pct of the price paid for equipment taken over by the government is, in the opinion of some, not enough for a fair profit.

Cushion Losses—To lessen the effect of further possible cutbacks in existing pool orders, some firms are tacking them on to the end of their order books. They are only buying long-lead-time raw materials such as forgings and castings needed to fill them. Little labor is being expended on these orders. As a result, if firm orders don't materialize, they will have incurred a minimum of time and expense.

As yet the military has not given any definite statement of what their future requirements will be. With defense orders declining and being cancelled, machine tool builders can't be expected to underwrite the cost of keeping their plants staffed and equipped for an all-out mobilization program.

Renegotiation Deferred — On the request of subcontractors, renegotiation of government subcontracts for new durable productive equipment, including machine tools, will be deferred until January 31. The extension was made because of a Senate Finance Committee request that special provisions of the 1951 Renegotiation Act be studied further.

Section 106(c) of the bill requires partial exemptions from renegotiation of subcontracts for the type of equipment named, based on total life of the items. The question now is whether further exemptions should be given on the basis of the use of a piece of equipment, in performance of renegotiable defense contracts. The extension only applies to renegotiation proceedings.



"These machines are so old they're turning out second hand cars."

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GENERAL PURPOSE

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for TRIMMING DIES

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This is the air hardening die steel meeting your shop's general-purpose cold work needs . . . exceptionally high in wear resistance . . . outstanding in high strength and toughness . . . with very low movement in hardening. AIR HARD is a bargain today, available from district warehouse stocks or promptly from our mill. Let us give you the facts.

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ROUND CALIFORNIA CHAIN CO.-

an important link in the nationwide Round Chain organization — is under the direction of J. D. Cavan, a Round veteran of 15 years. Like all other Round Chain Companies, Round California supplies a complete line of welded and weldless chain, slings, chain hoists, electric hoists, trolleys and winches. Sold exclusively through wholesalers and distributors.







Free Publications.

Continued

Dust control

Slanted specifically for metalworking industries, a new 24-p. booklet is available which discusses and illustrates design of exhaust hoods for many industry operations such as polishing, buffing and grinding, portable and flexible shaft grinding and polishing, cast iron machining, automatic buffing and oilmist control. Photographs of actual dust installations showing various methods of hooding dust sources are included. American Air Filter Co.

For free copy circle No. 13 on postcard, p. 121.

Non-destructive testing

Seeing isn't always believing. It depends on what is seen. That's the catchline for a new booklet which gives the how and why of testing methods developed by Magnaflux Corp. Whether you're making rocket planes, streamlined trains, sewing machines or mowing machines, there's a need for a completely accurate testing method which indicates whether or not a part is completely sound. Magnaflux Corp.

For free copy circle No. 14 on postcard, p. 129.

Automatic lathe

The Sundstrand automatic described in a new brochure has what it takes to turn out low unit cost parts on long or short runs. There is plenty of horsepower with automatic cycling and multiple tooling. That means shorter cutting strokes and shorter cutting time—a big saving for you. Quick-cycle change-over reduces machine setup time so that long run production advantages are available on shorter runs. Sundstrand Machine Tool Co. For free copy circle No. 15 on postcard, p. 123.

Quality control

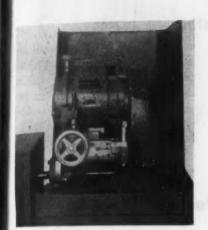
Operation Job Shop is the story behind the label when it comes to designing and fabricating custombuilt motor control. The story describes how the specialized skills of engineers and experienced workmen are combined to produce quality controlled products in the shortest time. Square D Co.

For free copy circle No. 16 on postcard, p. 118.

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NEW equipment

New and improved production ideas, equipment, services and methods described here offer production economies... fill in and mail postcard on page 129 or 130.



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Contourmatic grinds turbine bucket wiping tip

The new Contourmatic turbine bucket wiping tip grinder is the result of $2\frac{1}{2}$ years of developing and production grinding wiping tips on many different types of buckets and materials. It is a completely automatic unit wherein it is only necessary for the machine operator to locate the bucket in the proper holding fixture, and, by pushbutton control, completely and automatically grind the bucket wiping tip. Means of duplication has been de-

veloped around a simple mechanical function, where no electronics or hydraulics are used. Automatic wheel dresser dresses the diameter of the wheel; dresses any radius to 3/16 in. to conform to the radius of the wiping tip, and lowers the duplicating head the amount the dresser removes from the wheel diameter. The machine is rated at 150 pieces per hour. Mallard Industries, Inc.

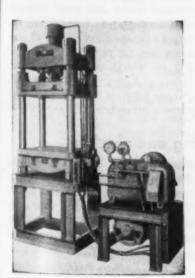
For more data circle No. 17 on postcard, p. 129.



Tempering unit controls furnace atmosphere

A new tempering unit makes possible both bright, scale-free tempering and controlled oxidation tempering from 400° to 1400°F. For bright tempering, the unit is supplied during the entire cycle with a protective atmosphere. After sufficient time at temperature, the load is cooled in the furnace until

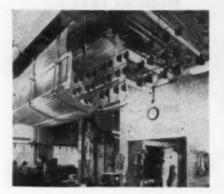
it reaches about 400°F. The scalefree work can then be removed without danger of oxidation. The finish remains clean requiring no cleaning or pickling before subsequent plating or painting. It also produces a controlled oxide coating if desired to reduce corrosion or wear. Ipsen Industries, Inc. For more data circle No. 18 on postcard, p. 129.



Platen presses have 10 to 500-ton capacities

New Rodgers presses, known as the Blue Ribbon line, are available with square or rectangular platens, up-acting, down-acting 90° angle transfer frame and top transfer. Multiple plates are offered for rubber and plastic molding, laminating, metal forming and shaping, die tryouts and utility applications. Presses allow maximum deflection not exceeding 0.0005 in. per in. of span on each of the work platens, when the full rated load is applied uniformly over the entire working area. Platens are cast steel with heavy bronze bushings riding on four ground and polished cold rolled steel rods. A two-speed hydraulic hand pump developing maximum pressure of 10,000 psi, with automatic shift or 2 or 4 cylinder power driven pump delivering 2½ or 5½ gal oil per min are offered. For faster approach and return speeds, the two power driven pumps can be furnished with auxiliary pumps or accumulators. All presses can be furnished with single or double acting cylinders. Two hundred separate models are available. Rodgers Hydraulic, Inc.

For more data circle No. 19 on postcard, p. 129. Turn Page

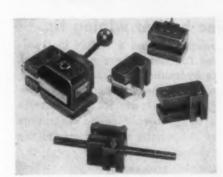


Overhead infrared oven saves floor space

Paint on 22,000 separate meter parts are baked in an eight-hour shift, in a new far-infrared oven at Foxboro Co. Consisting of only four aluminum Chromalox radiant heaters and reflective aluminum sheeting, the lightweight oven is located overhead to save valuable floor space. All colors of paint are baked at about the same speed

using the far-infrared heaters. No slowup is necessary to accommodate light colors. A flexible conveyer system permits easy handling of both large and small parts. Small items are hung on frames with three tiers, while larger ones are attached directly to main conveyer hooks. Conveyer speed is 4½ fpm. Edwin L. Wiegand Co.

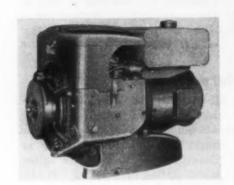
For more data circle No. 28 on postcard, p. 130.



New tool holder fits all lathes

A tool holder and its component boring adapters has been designed to fit all standard engine and turret lathes. The new tool holder features: vertical adjustment of tool bits without moving of bits in their holders; no shims needed for height adjustment of tool bits; positive repetition with unlimited number of tool bits or operations; tool bits can be removed with holder adapter for resharpening without changing setup; tool bits last 100 pct longer because of greater holder rigidity. Close tolerances can be maintained repeatedly to within 0.0003 in. Kirkelie Co.

For more data circle No. 21 on peateard, p. 129.



Electric generator built for magnet service

Generating plants of 3000 and 5000 watt capacity dc are built specifically for commercial and industrial lifting magnet use. They are designed for stationary and portable service in either manual or electric starting models. Prime power for the generators is provided by a 2-cylinder, 4-cycle, air-cooled engines. Extra large bearings, pressure

lubrication, high tension magneto ignition and other features are built into the engines. They have 230 to 250-v output, commutating poles, junction boxes, high potential tested insulation. They are also drip-proof and are cooled by a centrifugal blower. D. W. Onan & Sons, Inc.

For more data circle No. 22 on postcard, p. 129.



Gas powered trucks solve handling problems

Where heavy loads must be moved at high speed over long distances and in well ventilated areas, a gasoline powered low lift platform truck may be the answer. Both 3-and 5-ton capacity models are available. They are end-control, standup type trucks, powered with a four

cylinder gasoline engine driving a rugged worm and gear reduction unit through a disk clutch and two speed transmission. The load platform can be raised a distance of 534 in. Brake and clutch operate from standing position. Elwell-Parker Electric Co.

For more data circle No. 23 on pestcard, p. 123.



Cover design speeds opening and closing

Covers for pressure vessels used to impregnate castings for automatic automobile transmissions, fuel pumps, valves, carburetors, aircraft parts, electrical coils, and radar and range-finder parts, were designed to open and close in a matter of seconds. Made in diameters to 42 in., they withstand working pressures to 600 psi with temperatures not to exceed 300°F. Two types are available, both made without bolts, threads or multiple lugs. Clearing Process Cover Corp. For more data circle No. 24 on postcard, p. 123.

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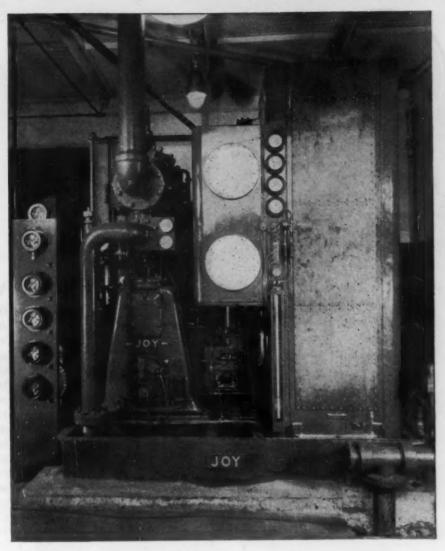
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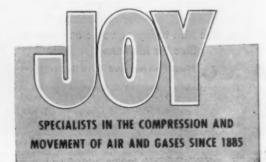
"No other way !"

WHY depend upon outside sources for your oxygen supply? You don't buy compressed air in bottles or in liquid form —why oxygen? Especially when you can produce your own high-purity oxygen with a JOY Generator at a substantial saving—as much as 50%!

The Joy principle of operation is an exclusive development. It's completely mechanical and automatic... no messy chemicals to handle and no residues to remove. The only raw material used is air, and the units are self-cleaning. Operating pressure is low (only 185 psi) and the use of pop safety valves and an automatic shut-off system makes for high inherent safety.

JOY Oxygen Generators are remarkably compact, and as simple to operate as an air compressor. The complete line includes units ranging in capacity from 500 to 12,000 cu. ft. of oxygen per hour at a purity of 99.5+%. • For the most economical solution to your oxygen supply problems, write us your requirements. Address Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.

WAD I 4516





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• DUALOC Slings, whether strand-laid or cable-laid, provide the material handling engineer with a tool of known strength and safety factor throughout. The design is modern . . . tested . . . and proved in service.

The DUALOC Ending insures sling strength equal to the FULL catalog strength of the wire rope, and the "Registry" specification requires that all fittings have strength equal to that of the wire rope. These are the basic reasons why ACCO Registered DUALOC Slings have set industrial sling standards.

You can get DUALOC Slings and Fittings from the stock of your ACCO Sling distributor. See him today or write our nearest district office for his name.

*Trade Mark Registered Patent No. 2463199 WIRE ROPE SLING DEPARTMENT AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

ACCO Registered DUALOC Slings

New Eqiupment

Continued



Warns of low oil level

Oil-Mist lubricators with 1-gal oil reservoirs and built-in automatic warning switches signal the operator by horn or red light, or shut off the machine when the oil level becomes too low. The gallon size reservoir reduces the frequency of filling and the signalling device makes it impossible for the unit to run dry accidently. Two models are available; one sets off a red light or a horn and the other shuts off the machine when the oil level goes below 23 oz. Stewart-Warner Corp.

For more data circle No. 25 on postcard, p. 129.

Safety valve

New automatic gas cutoff valve has been developed by Kelly Safety Device Co. for use with natural and manufactured gas, and is primarily intended to be placed on a building's gas supply line in front of the gas meter. In event of fire a fusible link made of Goodrich Geon 404 plastic, distorts at approximately 165°F, forcing a tension spring to close the valve. B. F. Goodrich Chemical Co.

For more data circle No. 26 on postcard, p. 129.

Charting materials

Assorted charting materials for bar and curve line charts are available in a kit which contains a plastic board, 28 different patterns on pressure-sensitive tapes, necessary accessories for application. Narrow tapes, 1/16 and 1/32 in. wide are included in the kit's 10,000 in. of tape. Chart-Pak, Inc.

For more data circle No. 27 on postcard, p. 123.

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Sub-zero thermometer

Temperatures as low as -200°F can be recorded on a distant-reading dial thermometer. It is provided with a continuous time-temperature record on a 12-in. chart and driven by a synchronous electric clock movement. Made for scientific precision, this thermometer is useful for shrink fitting. stabilization and stress equalization of alloy metals and testing equipment in sub-zero temperatures. An 8-ft stainless steel armored tube connects it to the cold chamber. The Dickson Co. For more data circle No. 28 on postcard, p. 129.

Practical lift truck

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Maneuverability of a new elevatortype mobile lift truck, the Uplifter, is provided by its 41-in. turning radius; compactness by its 24 x 24 in. lifting platform. It features dual capacity, the ability to handle load-limits of 500 and 1000 lb. The load limit is selected and the equipment is adjusted accordingly. Handle pressure per crank-turn for 1000-lb lift is 17 lb; for 500-lb lift, 19 lb. The Uplifter weighs 415 lb and has a 62-in. lift. Revolvator Co.

For more data circle No. 29 on postcard, p. 129.

Universal chuck

New 6-in. three-jaw universal chuck has threaded body back for direct mounting on lathes, milling machines, grinders, and other machine tools with 2½ in.-8 spindles. Since no adapter is required, the chuck is mounted close to the spindle bearing, minimizing chatter which may be caused by excessive overhang. Westcott Chuck Co.

For more data circle No. 30 on postcard, p. 129.



Turn Page





A chip salvage system, with an American Metal Turnings Crusher at the core, can help you realize new savings and profits in metal, oil, man-hours, factory space, and tool maintenance. Consider these typical money-saving, money-making advantages of an American installation:

- (1) Brings \$3 to \$4 more per ton for chips than for long machine shop turnings,
- (2) Reclaims 30 to 50 gallons of cutting oil per ton,
- (3) Prolongs tool life through more liberal use of recovered oil,
- (4) Saves 75% storage space . . . permits heavier freight car loads . . . cuts shipping costs,
- (5) Easier, faster handling,
- (6) Easier briquetting, so essential for foundry and steel mill use.

THIS COULD BE YOUR PROFIT STORY FOR NEXT YEAR!

- 3600 Gallons Cutting Oil Recovery at 30¢ Per Gallon..\$1,080.00 Per Year (30 gallons per ton x 240 tons=7200 gallons.
 Half of this, 3600 gallons, can be credited to use of chips instead of long turnings.)

TOTAL GROSS PROFIT

(Resulting from an American Installation).....\$2,340.00 Per Year



-New Equipment.

Continued

Scrap shear

A new scrap shear requires only four bolt holes for installation on a rotary type slitter. Its capacity is 3/4 in. wide, 1/8 in. material. Two individually-motorized units are required; they run on a track mounted on the delivery side of the slitter, and may be run in or out to accommodate various widths of strip. Roller bearings are used on the rotor shaft, and bearings may be adjusted for end play without removing end caps. Shearing action rather than the usual chopping lengthens blade life. Passon Machine Co.

For more data circle No. 31 on postcard, p. 129.

Creamy stopoff paste

Isopac C.G.X. is a stopoff paste sufficiently soft to be applied with a caulking gun or other pressure gun, and suited to insulate large numbers of holes. It prevents hardening of the protected areas while the rest of the workpiece is being hardened. It is easily knocked off after the heat-treating process is finished. Denfis Chemical Laboratories, Inc.

For more data circle No. 32 on postcard, p. 129.

Portable ramp

Adjustability and portable ramp designed for use by freight lines, department stores, and manufacturers. The unit can be installed in 5 min and its hydraulically operated



dock adjusted to any truck bed height in a few seconds. Two models are available—manually and electrically powered. The electric model has a 110-v. single phase ½ hp motor connected to a 350-lb hydraulic pump. Its capacity is 20,000 lb. John B. Illo Engineering Co.

For more data circle No. 33 on postcard, p. 129.

Turn Page

THE IRON AGE



COMPLETE INTEGRATION IS YOUR SAFEGUARD, TOO!

When you buy steel, you have the right to expect qualityas-specified. But consider . . . Only complete integration of every process-from ore mine to finished product-can assure high grade steel.

Alan Wood processes and plants form a completely integrated chain of production. Ore from Alan Wood Steel Company mines is tested in Alan Wood laboratories, smelted in Alan Wood blast furnaces, rolled in Alan Wood rolling mills. And Alan Wood quality control checks on every process-every step of the way!

PRODUCTS OF ALAN WOOD STEEL COMPANY

SPECIALTY PRODUCTS



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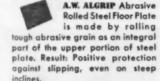
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STAINLESS CLAD STEEL PERMACLAD stainless

Clad Steel combines the surface characteristics of solid stainless with the easy forming qualities of mild carbon steel-provides corrosion resistance at lower cost.

ABRASIVE ROLLED STEEL FLOOR PLATE



ROLLED STEEL FLOOR PLATE A.W. SUPER-DIAMOND

Rolled Steel Floor Plate, made with an allover, engineered pattern of raised, skid-resistant diamonds, is easy to clean, easy to match, and grips without a slip.

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"Swede" Pig Iron Foundry, Malleable, Bessemer and Basic

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Plates (Sheared) Tank, Ship, Boiler, Flange and Structural Qualities Furnished in carbon, copper, or alloy analyses A.W. Dynalloy (High Strength Plates)

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Special qualities in carbon, copper, or alloy analyses A.W. Dynalloy (High Strength Sheets)

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ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PA.



Over 125 Years of Iron and Steel Making Experience IVY ROCK, PA. . SWEDELAND, PA. . DOVER, N.J. . OXFORD, N.J.



Tuffy SLINGS Last 3 to 4 Times Longer"

Only Tuffy has the new, braided fabric construction that (1) fights off knots and kinks, yet (2) can take much more stresses of distortion than ordinary wire rope. It means big savings in time, costs and delays on the job.

To make Tuffy Slings, scores of wires are stranded into 9 parts, then machine-woven into an interlaced wire fabric that has greater flexibility, extra safety and strength. Send for a free 3-ft. sample of Tuffy Sling fabric and test it yourself.

Proof-Tested For Safety. Each of the 12 types of Tuffy Slings is proof-tested to twice its safe working load. You'll find the working load figure on the metal eye splice sleeve. It's your assurance of a safe, longer-lasting sling.

Get The ONLY Sling FREE

See how you can cut sling costs up to 40% or more through proper care and handling of slings. Most-talked-about book on slings ever published!



-New Eqiupment-

Continued

Packaging material

Lighter, stronger, and more resilient than ever, new Fibro-Pad provides effective 2-in-1 protection for products of every size and shape. The super-soft inner padding of fluffed, chemically neutral fibers cushions the product against shock and pressure, while the tough protective outer wrap shields against water, grease, scratching and rubbing. A choice of 5 outer wraps meet requirments of regular Government packaging specifications. Free sample kit is offered. Fibleco Illinois Corp. For more data circle No. 34 on postcard, p. 123.

Nylon strip

A special drawing grade of nylon strip is being used to draw and form insulating shells for small type servo-motors. Atco Electronics Corp. has perfected a special method of drawing the shells on a production basis. The specific material used is standard FM10001 nylon strip, 0.015 in. thick x 2-in. wide. Polymer Corp. of Pennsylvania. For more data circle No. 35 on postcard, p. 123.

Core drill

Design of a new core drill for drilling cored castings is claimed to cut 80 pct off drilling time and 50 pct off drilling costs per ft of ordinary drills. The core drill has eight tungsten carbide cutters and features ease in drilling a through



hole, the core being removed by means of the core slot in the side of the drill body. Drills are made in sizes 34 to 4 in. diam and up to 36 in. long. They can be supplied with plain pilot for counterboring or twist drill pilot for step drilling. Tilden Tool Co.

For more data circle No. 36 on postcard, p. 129.

Turn Page



with TOCCO* Induction Heating

- In 1944 the Army Chemical Corps called for 24 million bomb noses of a certain type. Current techniques required 84 million pounds of steel and more automatic screw machines than could possibly be made available.
- Edgewood Arsenal, given the task of solving this vital production puzzle, abandoned conventional machining methods and employed a hot extrusion process—using TOCCO Induction Heating to bring 2 pound steel blanks to forging heat. Former methods required 3½ pound blanks to produce the same bomb noses.

60 KW, 10,000 cycle TOCCO machine heating steel blanks for extrusion into bomb noses.

● In addition to vast savings in steel and money, the new shells had superior fragmentation properties. But above all the 1944 schedule was met—enough and on time to strike a telling blow for victory in World War II.

THE OHIO CRANKSHAFT COMPANY . CLEVELAND 1, OHIO



Induction Heating Equipment must meet the requirements of the Federal Communication Commission's Rules and Regulations Relating to Industrial, Scientific and Medical Services, Part 18. All TOCCO equipment is certified to comply with these rules and regulations.

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COMMERCIAL LIGHTWEIGHT CASTINGS

Your commercial requirements for lightweight castings in aluminum or magnesium may be tough, but we'd welcome an opportunity to look them over. We've tackled a good many diversified casting problems over almost a half century.

Our four completely equipped plants and their trained personnel are at your disposal.



*Well-Cast

MILITARY LIGHTWEIGHT CASTINGS

Aircraft wheels, strut parts, engine parts and miscellaneous components are being made every day at our plants, in aluminum and magnesium. X-Ray inspection, close attention to detail, complete facilities for production in sand, semi-permanent and permanent mold form.

Well-Made Wood and Metal Patterns. Well-Cast Ampco Bronze Castings.

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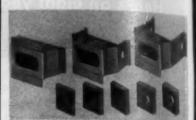
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THE WELLMAN BRONZE & ALUMINUM CO.

DEPT. 8, 12800 SHAKER BLVD., CLEVELAND 20, OHIO

-New Eqiupment

Continued



Adjustable insert

A combination of an elongated hole in the insert and an offset hole in the nut makes it possible to put the nut on the bolt before placing it in the insert and adjusting it to any desired point. The inserts have other advantages: they will support a 1500 to 2400-lb load; Vshaped notches in the face and two center grooves on the side simplify alignment; four holes in the insert permit placing it on dowel pins or reinforcing rods. Made of heavygage steel, the inserts are for bolt sizes from 1/4 to 3/4 in. Super-Grip Anchor Bolt Co., Inc.

For more data circle No. 37 on postcard, p. 129.

Standardization

An intensive standardization program coupled with engineering improvements in certain GE aircraft instruments is reducing prices by 20 pct. It was found a small percentage of aircraft - instrument models produced could, if properly applied, satisfy all requirements. GE has standardized many of these models, permitting mass production; e.g., the GE aircraft instrument generator has been reduced from 102 to 2 models. General Electric Co.

For more data circle No. 38 on postcard, p. 129.

Plunger lubricant

A high temperature lubricant, called Plunger Slick, has been developed for use on plungers and plunger cylinders of cold chamber diecasting machines. It eliminates galling and sticking of the plunger, plates plungers and cylinder walls with a lubricating coating which will not run off at high temperatures and it completely protects against corrosive action of molten aluminum. It is available in 1 and 5-gal pails and in 50-gal drums. G. W. Smith & Sons, Inc.

For more data circle No. 39 on postcard, p. 129.

the Iron Age

SALUTES

S. E. Reynolds

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Three years ago he had to sell his car to stay in business—this year he hopes to gross over \$1 million.



SOME of us worry a lot these days about the "younger generation." Then we happen across a chap like Spence Reynolds and begin to realize that worrying is a bad habit.

Spence is president and treasurer of Roberts-Reynolds Co., a steel fabricating and engineering outfit in Pittsburgh. He is just 35. This year the company will do a gross business of over \$1 million and is making money. But it wasn't always that way.

Spence started his business a little over 5 years ago in a shop across the railroad tracks in Pittsburgh's "Strip" district. Total capital: \$1800. Number of employees: Three, including Spence and his partner, Jack Roberts. First year's gross: \$90,000; net loss: \$2000. Second year: Same gross, little profit. Third year was so tough creditors were looking at the shop with an appraising eye, and Spence began to wonder whether working 18 hours a day for a subsistence was worth it. But he sold his car to keep going.

First real "break" came in 1950. That year the company put on 25 men, wound up with a gross of \$265,000. Last year's gross: \$863,000. This year will be better as expansion continues.

The company bought a plant in Avonmore, Pa., has a \$100,000 Certificate of Necessity to develop it, and has formed an engineering subsidiary. Total employment is now 75.

We lack the space for details. But the full story is a lot better than any fiction we've read on the virtues of private enterprise, initiative and just plain hard work.



The mirror-like finish and exact gauge of McLouth Stainless Steel gives you better production performance on every job.

McLouth Stainless Steel is manufactured in a wide range of grades and finishes and the exact chemical composition of the steel is determined for every order. It has a high resistance to corrosion, heat and wear to give your products better appearance and longer life.

Ask for a McLouth Service Engineer to analyze your stainless requirements. When the product you make today, or the product you plan for the future calls for stainless, make it with McLouth Stainless Steel.



HOT AND COLD ROLLED STAINLESS AND CARBON SHEET AND STRIP STEEL

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the Iron Age

INTRODUCES

Leggett C. Campbell, appointed esident and general manager, NEW-RK WIRE CLOTH CO., Newark, J., and John L. Campbell, elected recutive vice-president.

Clark C. Sorensen, appointed assisnt to the president, HARRIS-SEY-OLD CO., Cleveland; Charles J. Conn, Jr., named manager of personnel lations, Cleveland, and William M. ughey, becomes personnel manager, ayton plant.

Frederick L. Cole, appointed viceresident in charge of sales, PIPE & UBULAR PRODUCTS, INC., Phildelphia; James Dunn, Jr., appointed ice-president in charge of production; and James B. Moore, named secretary and treasurer.

M. C. Nelson, appointed vice-presient and a director, BARKSDALE YALVES, INC., Los Angeles.

Edward H. Cartwright, appointed irector of sales, THE ENOS & ANDERSON CO., INC., Buffalo.

M. P. deBlumenthal, named chief esearch engineer. STUDEBAKER CORP., South Bend, Ind.

Fred W. Rexford, appointed an excutive on the National Sales Staff, THOR CORP., Chicago.

William H. Miller, appointed chief metallurgist, Bowser Technical Refrigeration Div., BOWSER, INC., Teryville, Conn.

William M. Terry, Jr., named assistant chief engineer, Pittsburgh works, ALLIS-CHALMERS MFG. CO., Milwakee.

John B. Cataldo, named director of research and development, BULLDOG ELECTRIC PRODUUCTS CO., Detroit.

Ben E. Young, elected a director, DETROIT STEEL CORP.. Detroit; and Lloyd A. Martz, appointed assistant manager of sales.

Clayton K. Baer, appointed service engineer, tool steel sales division, CRUCIBLE STEEL CO. OF AMERICA, with headquarters in Syracuse, N. Y.

Robert C. Dyrenforth, joins engineering staff, THE PARKER APPLIANCE CO., Cleveland.

Elmer A. Stevens, named treasurer, B. F. GOODRICH CO., Akron, Ohio.

Thomas F. Lynch, appointed associate general counsel, U. S. STEEL CORP.; and Benjamin L. Rawlins, appointed assistant general counsel and secretary.

Frank T. Downs, appointed manager of sales, HOUDAILLE - HERSHEY CORP., Detroit.

Everett S. Hoff, appointed production manager, Bars and Tubes, COL-UMBIA STEEL & SHAFTING CO., Carnegie, Pa.

Willard G. Cook. appointed manager, newly established Industry Engineering Dept., Pittsburgh, ELLIOTT CO.

Jack E. Burch, named sales manager, Industrial Div., ROTARY LIFT CO., Memphis, Tenn.

Michael Fabbri, appointed electric motor sales engineer, New England Area, OHIO ELECTRIC MFG. CO., Cleveland.

Hugh O. Nash, named district sales manager, Raleigh, N. C., SOUTHERN STATES IRON ROOFING CO.; and Cater Lee, appointed branch manager, Birmingham, Ala.



JAMES F. CLARK, elected vicepresident in charge of finance, American Car & Foundry Co.



C. P. BOGGS, appointed vice-president in charge of manufacturing, Brush Development Co., Cleveland.



R. E. O'NEILL, appointed assistant general manager, Atlantic Steel Co., Atlanta, Ga.



Buying? If you are in the market for steel plant equipment—Call Curry! Whether you need a 3-Hi Breakdown Mill, a 44" Roll Grinder, a 1,000 H.P. Motor, or other equipment, we may have the answer to your requirements among our complete list of available steel plant machinery and equipment.

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Personnel

Continued

Howard E. Crawford, appointed general sales manager, Pontiac Motor Div., GENERAL MOTORS CORP., Pontiac, Mich.

W. E. Watson, promoted to assistant to the manager of manufacturing, FAIRBANKS, MORSE & CO., Chicago; Paul R. Flood, appointed general manager, Pomona Pump Works; succeeding Charles L. Barrett, who became a consultant to the Pump Div.; and Lewis H. Kessler, named chief hydraulic engineer, Beloit Works.

Elmer A. Koenig, appointed sales manager, YODER CO., Cleveland.

George A. Schiller, named assistant sales manager, DOLLINGER CORP., Rochester, N. Y.

C. Robert McCloskey, named sales manager, FURNACE ENGINEERS, INC., Pittsburgh.

Charles A. Watson, appointed general manager, KAISER FRAZER EX-PORT CORP.

H. H. Witte, appointed sales engineer, ROYLYN, INC., Glendale, Calif.

Arthur Hjortsberg, appointed assistant chief metallurgist, U. S. STEEL CO., Pittsburgh.

Anthony O. Maloney, promoted to factory manager, Lynch Road Plant, CHRYSLER CORP., Detroit.

Herman G. Grosser, appointed district sales manager, Cleveland office, WHITFIELD CHEMICAL CO., Detroit.

Joseph W. Harrison, made technical staff assistant, Works Managers Dept., ARMA CORP., Brooklyn and Mineola, N. Y.

Donald E. Jenkins, appointed plant manager, Lighting Div. Plant, Vicksburg, Mass., WESTINGHOUSE ELECTRIC CORP.; and Thomas G. Cameron, appointed superintendent of manufacturing.

Edward F. Rau, appointed sales representative, BOHN ALUMINUM & BRASS CORP. His headquarters will be in Minneapolis.

Robert E. Goodacre, appointed Texas representative, INLAND STEEL PRODUCTS CO.

George E. Campbell, becomes district salesman, New York office, THE BRIDGEPORT CHAIN & MFG. CO.



FRED H. LUCAS, appointed manager of structural and plate sales Sales Div., U. S. Steel Co.



J. P. GERRESE, appointed chief engineer, Gary Plant, National Tube Div., U .S. Steel Co.



C. L. WARNER, placed in charge of the sales activities, Thomas Strip Div., Pittsburgh Steel Co. in Warren, Ohio.



ROBERT KIRK, becomes manager, Foreign Dept., Pittsburgh Cole & Chemical Co.

Septe



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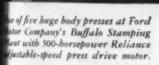
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Personnel.

Continued

Everett K. Hampel, named vicepresident in charge of merchandising, ODIN STOVE MFG. CO., Erie, Pa.; William P. Schoenfield, appointed sales manager; and Charles E. Lanigan, named assistant sales manager.

Tom G. Winterton, made advertising manager, LATROBE STEEL CO., Latrobe, Pa.

Dan W. Talbott, joins the Eastern sales staff, DURALOY CO., New York office.

J. B. Lyons, appointed direct southern sales representative, Atlanta offices, BILLINGS & SPENCER CO., Hartford.

A. P. Metzger, appointed Florida sales representative, GRIES REPRO-DUCER CORP.

Richard P. Bell, appointed assistant general paint manager, Merchandising Div., PITTSBURGH PLATE GLASS CO., Pittsburgh.

Henry C. Botsford, named in charge of advertising department, sales section, GENERAL MOTORS, Detroit. He succeeds Dolph H. Odell, who has retired.

Vincent F. Flaherty, appointed plant manager, THE YALE & TOWNE MFG. CO., Gallatin, Tenn., new lock and hardware factory being constructed.

Wallace M. Schleicher, appointed general sales manager, Edison Storage Battery Div., THOMAS A. EDISON, INC., West Orange, N. J.

Carl Johnson, becomes foreman of the Tool Room, THE TAFT-PIERCE MFG. CO., Woonsocket, R. I. He succeeds Fritz Hoberg, deceased.

OBITUARIES

Moritz O. Kopperl, 51, executive vice-president, Edgcomb Steel Corp., Hillside, N. J.

J. W. Unroe, formerly general manager, Steubenville Works, Wheeling Steel Corp., Wheeling, West Va.

Henry G. Sommer, chairman of the board of directors, Keystone Steel & Wire Co., Peoria, Ill.



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PLASTIC PROTOTYPES, PERSPECTIVE DRAWINGS speed new product production



By W. G. Patton
Asst. Technical Editor

Getting new products into production becomes more difficult and more costly every year. Production of sheetmetal hammer block prototypes is slow. Assemblies are more complex and drawings hard to read. Production problems are harder to visualize in advance. Creative Industries, Detroit engineering firm, has tackled this problem with two methods to help production executives and shopmen more readily visualize new part production problems. Plastic prototypes are rapidly made from inexpensive wooden models. This cuts costs by minimizing later design and tooling changes. Three-dimensional perspective drawings make complicated assembly drawings readily understood and simplifies production and assembly methods.

Business executives have long complained of the high cost of producing prototypes of proposed new products. There were unavoidable delays in building models for production studies. Costs for making minor changes in production tooling were high. Large numbers of executives, plant engineers, foremen and vendors had trouble reading complex assembly drawings clearly and accurately.

Now, Creative Industries, Detroit engineering firm, hopes to solve this problem through (1) use of low cost plastic prototype models and (2) through three dimensional perspective drawings that can be read easily by both the busy executive and the man on the assembly line.

Both the plastic models and the three-dimen-

sional drawings can be produced fast and at low cost. They enable executives, engineers and tool designers to "think with their hands," and to visualize parts and production problems more readily.

Value to a typical metalworking firm of a program designed to simplify engineering is best illustrated by a specific problem. A manufacturer desires to produce a new rotary-type lawnmower. The product is to be designed by a firm located in the Detroit area. Stampings will be made in Des Moines, Iowa.

Instead of hammering out a metal lawnmower cover on an expensive maple model, a simple pine model of the part can be made quickly and cheaply. In a few hours, the plastic prototype,

"Many expensive changes in tooling that might have been required can be avoided . . ."

Fig. 1, can be completed and sent air mail to Des Moines. A day or two later, the model comes back, with notations for changes to facilitate manufacturing. These are made quickly in the inexpensive wood model and a final plastic prototype is easily produced.

An accurate model of the new lawnmower cover is available quickly and at low cost. Duplicates can be made, if desired, for other members of the firm. The important thing is: engineering changes were made in the product at a time when they could be made at low cost. Engineering decisions were made quickly, despite barriers of great distance. A decision on a new product was made in a week that might have taken much more time and cost a lot more money.

In another case, a tractor manufacturer asked Creative Industries to design a new tractor seat. A plastic prototype of the proposed seat was sent to the client for checking. Manufacturing and sales executives studied the model for appearance, customer appeal and ease of manufacture. Several changes were recommended. The plastic model was air mailed back to Detroit.

Changes were made quickly in the wood model and a new plastic model was made. The firm was now ready to go ahead with detailed engineering drawings and was in a position to order permanent tooling.

Plastic models, typified by the parts shown in Figs. 2 and 3, are finding widest use in development of products which require accurate visualization of many complex assemblies months in advance of production. Even experienced craftsmen and engineers find it difficult to foresee all

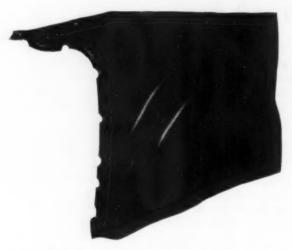


FIG. 1—The full size plastic prototype shown here was made from a pine model in a few hours. The model was then sent via airmail to the client for checking.



FIG. 2—Typical plastic assemblies and parts made of formed plastic sheets. These may be made quickly, either full size or scaled down according to requirement.



FIG. 3—Typical wood patterns and plastic parts made from these patterns. The plastic parts are always made before the purchase of permanent tooling for the job.

problems that may arise in producing an automobile.

Drawings of a proposed new car are sent to the model shops. In a few days, wood, clay or plaster models are ready. Plastic prototypes are made. Production executives have available, 3 to 6 months earlier than heretofore, three-dimensional parts that can be handled and studied in detail. Problems in materials handling, press forming, welding, assembly or shipping can be anticipated. Parts or assemblies, Fig. 4, can be made quickly.

Press men can visualize best die design. Welding engineers can check electrode positions and clearances. Transportation engineers can anticipate shipping problems. Recommended changes can be made quickly. The group can meet again the following day to study a revised prototype. In a few days, agreement is reached by all members of the production staff. Many expensive changes in tooling that might have been required later can be avoided.



FIG. 4—Putting the finishing touches on a scale model assembly of a proposed truck model. These models can be picked up, handled, measured and checked by engineers, tool designers and materials handling experts.



FIG. 5—Heat is required in the production of accurate, tough plastic prototype models of sheet metal parts. Here the workman is placing a plastic part in the oven.

Prototype plastic models shorten the time cycle for bringing out new designs for manufacturing. The use of sheet metal prototypes required expensive wood hammer forms. Simultaneously, with production of hammer forms, die models were made. The old method required both a hammer form—always subject to change—and a die model that was also subject to change.

Using plastic prototype models, hammer forms are not built until plastic models have been evaluated and approved for production. Simultaneously, detailed drawings can be started. A time cycle that previously ran consecutively for many months has been telescoped. All later engineering and tooling effort is concentrated on a product that is likely to undergo few, if any, major changes.

Production of plastic models is a simple procedure. Sheets of thermoplastic of the same gage as the steel to be used are forced to assume the same shape as a plaster, clay or wood model. Heat at 250° to 300°F is applied in the process. In some cases vacuum or applied air or hydraulic pressure is also used. Considerable experience is required in reducing drawings to scale models.

Plastics commonly used are Royalite, a thermal plastic produced by the U. S. Rubber Co., and Boltoron, a plastic made by Bolta Co.

Individual parts, Fig. 5, may be assembled, using nuts and bolts, staples or cement. Interior parts can be made one color, exterior parts of another. Clear plastic can be used to show the interior of the assembly. With good workmanship, accuracy of the prototypes can be held within close tolerance.

Selection of the scale will depend on intended use of the model, and size of the finished product. Scale models of typewriters and tanks have been made

Plastic models hold their shape under ordinary heat and humidity. They do not embrittle with age and withstand rougher handling than normally encountered in service. Dimensional changes resulting from normal changes in temperature can be ignored.

In the preliminary design stages where a comparatively few men are called upon to analyze the product use of the three dimensional study model saves considerable time and money.

Once preliminary OK's have been given for a new product or part, management faces the problem of preparing for production. Increased intricacy of manufactured products, inability of many new employees to read blue prints, Fig. 6, growing complexity of assembly drawings have

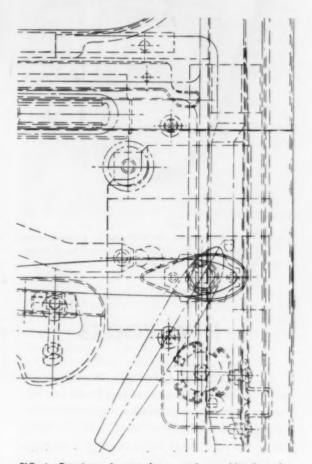


FIG. 6—Drawings of many sheet metal assemblies have become very complex, as shown in this illustration.

"Growing complexity of assembly drawings have magnified job of getting . . . into production."

magnified the difficulties of getting any product into production. The technique of three dimensional perspective drawings is being successfully used to promote employee training and cut tooling costs.

Fig. 6 shows a portion of an orthographic drawing. It is difficult to read even for an engineer or toolmaker. Fig. 7 shows the same thing in perspective drawing. Design details, obscure in the previous drawing, are readily seen. Also, perspective drawings can be much smaller than an engineering drawing and still be clearly understood.

Perspective drawings are produced to scale, with the assistance of a master grid. The prin-

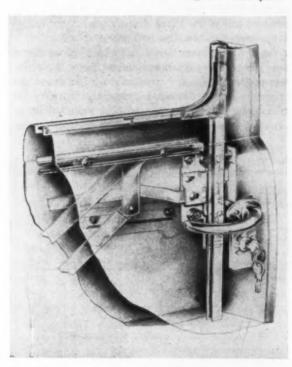


FIG. 7—This is the same as the orthographic drawing shown in Fig. 6 except that the detail is presented by a three-dimensional, perspective-type drawing.

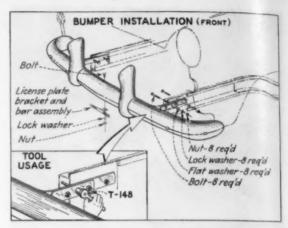


FIG. 8—A complete bumper assembly for a car is presented in this compact, easy-to-read perspective view.

ciple of the grid is simple. Visualize a cube or series of cubes placed end-to-end with grid lines drawn on the exposed surfaces. Then view the grid from some location outside the cube. This makes a grid with "built-in" vanishing lines on the grid lines—a perspective grid. Projection of the plotted points from the side, plan and end views becomes a point on the part. By connecting these points with lines, the part is shown accurately and to scale in perspective.

The three-dimensional perspective technique has been used increasingly by Creative Industries during the past 2 yrs to show exploded views, Fig. 8, of manufactured parts and cutaway assemblies. These drawings can be blue printed and widely distributed. Selection of scale and method of illustration depends on the product and intended use of the drawing. In the auto industry, a ½ scale is popular.

When used as processing or instruction sheets, these perspective drawings show the sequence of operations as well as the position of the operator with respect to the work. Some plants have mounted perspective drawings on easels in the shop for employee training purposes.

Use of plastic study models, followed by perspective assembly drawings, helps executives, engineers and tool and production personnel to more readily and completely understand design and production problems.

NEW BOOKS

- "Drills and Drilling Practice." Second edition of a popular book on the ins and outs of drilling. Complete information, including diagrams and engineering data, collected from more than 50 years experience of a machine tool manufacturer. National Automatic Tool Co., Inc., Richmond, Ind. \$1.00. 61 p.
- "Mechanical Properties of Metals at Low Temperatures." Low temperature properties of metals are becoming increasingly important with growth of the refrigeration industry and expanding demands for liquefied gases. National Bureau of Standards Circular 520. Government Printing Office, Washington 25. D. C. \$1.50. 206 p.

Wide face grinding wheels

boost cylinder sleeve output

By J. C. O'Rourke

Mechanical Engineer Industrial Power Div. International Harvester Co. Melrose Park, III.

Diesel and other internal combustion engines are manufactured in several sizes and in large volume by the Melrose Park Works of International Harvester Company. Engines require replaceable cylinder sleeves made in several sizes, the largest being 6½ in. OD, 5¾ in. ID and 1½ in. long. Sleeves are made of alloy cast iron. After machining they are heat-treated to 45-50 RC hardness before being ground.

A narrow out-turned flange at one end of each sleeve makes it impractical to feed them through a centerless grinder in finishing the OD, because of the interference of the flanges. Until recently grinding of the OD was done on an arbor on

CYLINDER SLEEVE setup in new No. 3 Cincinnati centerless grinder recently installed at International Harvester's Melrose Park Works. Wheels have a 15-in. face and do a fast job while holding close tolerances.

centers, using four plunge cuts with a wheel of 4-in. face. A rate of about 11 sleeves per hr was attained, the cuts overlapping to avoid steps.

To improve the rate as well as the quality of work, use of a centerless grinder equipped with wheels of 15-in. face was suggested. However, wheels of this face width had not been applied previously in such work and centerless grinders adapted for wheels of this width were not available.

Harvester production engineers asked Cincinnati Milling Machine Co. to adapt one of its No. 3 centerless grinders to use a wheel of 15-in. face. This machine, shown here, is now in regular use. It does a good job of sizing the OD of sleeves in a single operation at a rate of 32 per hr or nearly three times the prior rate.

Removes metal to depth of 0.020 in.

On the largest liner, the OD is held between 6.141 and 6.142 in. and runout as well as taper are kept below 0.001 in. Sleeves are loaded by hand with the flange out and overhanging the grinding wheel, which is a 20 x 15 x 12-in. size and of C-46-L5-V5 grade Machlin. This is used in combination with a back up or control wheel of the same make of 14 x 15 x 5-in. size and A-80-R2R grade. The cutting wheel removes metal to a depth of 0.020 in. in making the grind.

Dressing is done with a diamond having a standard hydraulic feed except for the unusual length of traverse, 16 in. This diamond removes 0.004 in. per pass and makes four passes per dress-in. Dressing is done once for each 15 to 20 sleeves ground. Similar but less frequent dressing of the backup wheel is also done.

Except for alterations (including a longer spindle and guards) to take the wide face wheels, the grinder is substantially a standard machine equipped with a 30 hp motor and an oversize tank for coolant. After the OD of sleeves is ground in the new machine, they are located on the OD while the ID is lapped to size in conventional fashion.

Forging Dies Finished, Maintained



By E. F. Anderson

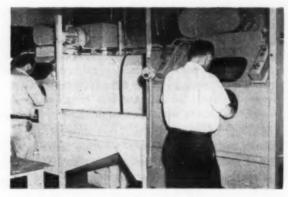
Special Engineer

American Wheelabrator & Equipment Corp.

Mishawaka, Ind.

Directional lines and grinding wheel snags—long a problem in finishing forging dies—are now being efficiently removed by wet blasting. Tolerances, sharp corners and lines are not affected. The abrasive gets into areas inaccessible by hand, produces an easy-releasing matte finish. In die maintenance, it removes scale caused by lubricants and high temperatures. Even after many cleanings, corners stay sharp and tolerances hold.

Some interesting changes have taken place in final surface finishing and in shop maintenance of forging dies as a result of the wet blasting process. Manual labor requirements for finishing dies after heat treatment have been completely eliminated, and production cleaning and finishing rates have been decidedly improved. Although it is one of the newest cleaning and finishing processes, wet blasting is rapidly growing in popularity because it offers such close control over the surface characteristics of precision-built parts and those in which the alteration or breakdown

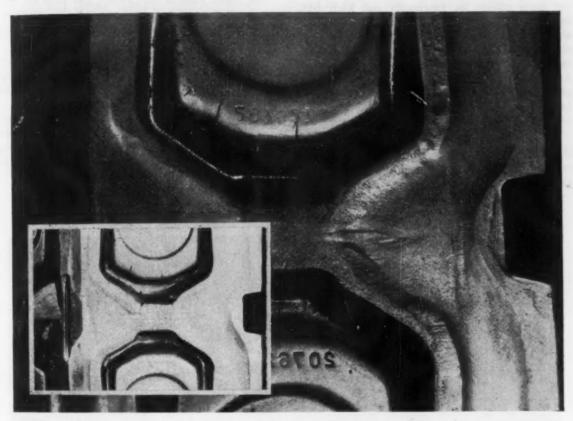


WET BLASTING unit consists of original machine and power rinse tank, left, to which an additional blasting cabinet has been added. Cabinets connect to rinse tank by track.



THE INSIDE STORY. This shows heavy die on rotary table on tracked car inside cabinet of Wheelabrator Liquamatte machine. Nozzle is about $2^{1}/_{2}$ in, from work.

by Wet Blasting



TOLERANCES can easily be held to 0.0001 in. This die, half scaly—half free is 14 in. long. Insert shows how cleaning shows up heat checks. Method has also eliminated much manual polishing in die maintenance.

of sharp edges, corners, or lines must be avoided.

Among the most difficult jobs in the finishing of forging dies are minute directional lines and grinding wheel snags which are left on the die surfaces, since they make it difficult to release forged parts from the dies. In the past, these lines and snags were expensive to remove. Polishing papers, brushes, wheels, and stones could be used to smooth out wheel and machine tool marks and other surface imperfections on flat and accessible surfaces. But irregular contours and cramped quarters made it difficult to obtain satisfactory results in the die cavities. Polishing is a slow operation anyway, so the need for a fast

precise method of close-tolerance finishing was recognized.

The wet blasting process, which consists of hurling at high velocity, very small-sized abrasives in a water suspension, leaves a matte-type surface on the die. Matte surfaces are ideal for forging dies because they permit easy release of a formed part from the die almost immediately after it is put into service, thereby eliminating a break-in period. They also hold lubricants very well.

Since abrasion is under close control with wet blasting, machining, grinding, and manual dimensioning can be done so that the correct

"Wet blasting has also eliminated manual polishing in the maintenance of dies . . ."

tolerances are obtained prior to hardening. It is unnecessary to leave any extra metal to compensate for the wet blasting operation. After hardening, the heat treat scale is removed by wet blasting and the die is ready for service.

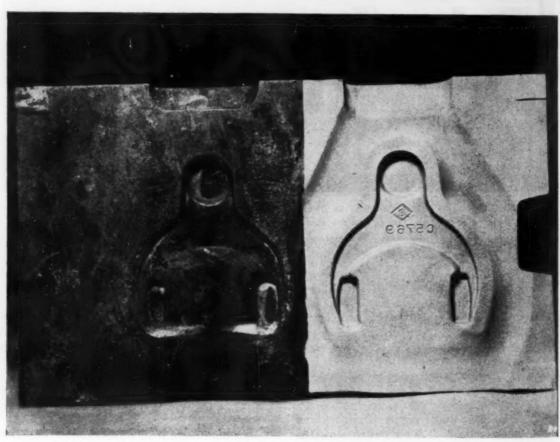
Wet blasting has also eliminated manual polishing in the maintenance of dies which have to be cleaned. It has been a particular help in removing scale caused by lubricants and high temperatures. This carbonaceous scale can eventually alter the shape of a forged part. Therefore crevices and corners must be kept clean. Cleaning does not alter the dimensions of the cavities. A die produces parts with correct tolerances even after many cleanings. The edges on the parting faces of the die remain sharp. There is no danger of excessive flash during forging.

A maintenance problem frequently faced is that forging dies develop burred edges and corners so that the cavities become slightly narrower at the top than they are at the bottom. When the die is reworked, with the burred par ground off and rebuilt, wet blasting plays an important part. The matte-type surface offers more bonding area for the metal to cling to than does a perfectly smooth surface, and it is excellent for receiving the metal used to build it up. Moreover, workmen prefer to work on matte surfaces because they produce no glare under lights and are therefore less tiring to work on.

Wet blasting is done in metal cabinets, with the slurry mixture propelled at the work through a gun. The abrasive is kept in suspension, agitated either by compressed air or a recirculating pump, and is forced through the gun at a high velocity by air at from 80 to 100 psi. The operator stands outside the cabinet, and with his arms extended through gauntlets on the front of the machine, he manipulates the abrasive gun (see cuts).

Research indicates that abrasives in the range of 140 mesh are most satisfactory for forging dies, although a coarser abrasive is sometimes preferable.

In selecting equipment, it is a good idea to send typical parts to the manufacturer's demonstration laboratory. Each application has its own peculiar characteristics and such a laboratory is valuable in determining the proper equipment and abrasive to meet its requirements.



CLEANING ACTION of wet blast unit is obvious here. Rusty, scaly left half of die was masked while right half got 51 sec blast with 325 NE Liquabrasive. Abrasives in range of 140 mesh are most satisfactory.

Carbide tool cuts cost for threading hardened studs

Diesel engines built by International Harvester Co. at its Melrose Park Works require many close fitting studs made from steel heat-treated to RC 28-34 before threading. Threads have to be smooth and close fitting, partly because they must screw into precision tapped holes under a specified torque.

Formerly stud threads were cut in conventional fashion using standard chasers of high speed steel. Chasers had a short life between grinds because of the hard steel cut. It was difficult to hold the specified limit of only 0.001 in. on pitch diam and achieve the smooth surfaces needed. If not held, studs would require too much or too little torque when applied, causing rejections as well as lost time.

To solve the problem, single-point carbide tools

were tried. With carbide tools, fine cuts at high speed and consequently numerous passes were necessary to hold to required limits and smoothness. An English Cri-Dan lathe was chosen to do the job. It has an unusually fast automatic cam operated mechanism to give the tool the rapidly repeating passes needed.

Single-point carbide tools are provided with chip breakers but have standard grind. They have long life and hold the specified dimensional limits and smoothness. On a typical stud such as ¾-in. 10 tpi, 21 passes are needed to produce the thread. Although tool motions are very rapid, production rate is only half that attained with chasers. This is offset by a lower scrap percentage, a decrease in grinding and setup time and by a marked saving in tool life.



HARDENED STUDS are threaded with single-point carbide tool in English Cri-Dan lathe. Numerous rapid passes are required but close limits are held without the difficulties encountered when high speed steel chasers were used.

DUAL PURPOSE FIXTURES HO

By Ed Pirner General Manager Daco Machine & Tool Co. Brooklyn, N. Y.



Fifty seven different machining operations are required to produce a guided missile support rotor whose largest dimension is a 1.375 in. diameter. Limited production quantities made it necessary to keep tooling costs at a minimum. Wherever possible, fixtures were made to serve more than one operation. A total of 32 fixtures were used.

As makers, primarily, of instruments and instrument tooling, Daco has seen many tough jobs. One of the most interesting is the instrument part shown in Fig. 1. Though its largest dimension is a 1.375-in. diameter, 57 different machining operations are required in its production, utilizing a wide range of precision toolroom equipment including a jig borer and jig grinder.

Specified accuracy is within plus or minus 0.0001 in, on many of its surfaces. The holes through the ears must be in line within 0.00005 in. Several diameters are required to be concentric within 0.0002 in.

In view of initial limited production quantities, every attempt was made to hold tooling cost down by making as many fixtures as possible serve for more than one operation. In all, about 32 fixtures are used which were designed and built by Daco Machine & Tool Co.

The cold rolled bar stock is broken down in a turret lathe, followed by milling the sides of the part ears so they can be used in location during the next few operations. Eventually, however, the 1-in. diam shoulder is finished and used for location in practically all subsequent operations.

One of the most interesting fixtures is that shown in Fig. 2, used for boring and grinding the holes in two ears. These are not straight bores, but have two steps. The three diameters which create these steps are held within 0.005, 0.002, and 0.0017 in. respectively. The part is set into the fixtures with location from the 1-in. diam., and aligned by pins through the holes to be bored. After clamping, the pins are withdrawn and the top hole is bored on a jig borer. Tools are set from the upper face of the guide bushing. After boring the top hole, the lever at the back of the fixture is moved, withdrawing a locking pin. This permits the face of the fixture to be rotated 180°, bringing the other ear up for boring. An extension from the face, shown

at the left in Fig. 3, has a button on its top and another on its bottom. One of these buttons, in either indexing position, bears on one of two 0.0001 indicators, for zeroing after indexing.

One ear is later to be slotted, but boring is done first to avoid an interrupted cut. The part is removed from this fixture for other operations, including slotting the ear, and finally returned to the same fixture for grinding the holes on a jig grinder. Specifications call for taper not to exceed 0.00005 in.

A major operation is milling the spherical groove between the ears, done in the fixture shown in Fig. 3. Again, location is from the 1-in. diam., and a pin is used through the ear bores for alignment. After the part is clamped, the pin is removed for milling with a special cutter. With the fixture turned 90°, a second milling operation is performed.

Another dual-purpose fixture is shown in Fig. 4. In this tool the slot in one ear is milled. A sliding pin, moved by the lever projecting above the gage block at the top of Fig. 4, fits in the ear. This pin is used for alignment, and is slotted so it can remain in the ear during milling

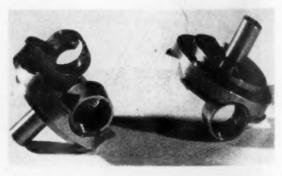


FIG. 1—Part for guided missile requires 57 machining operations. Accuracy within plus or minus 0.0001 in. is required on many of its surfaces. Wide range of precision tool room equipment is used in machining the part.

ES HOLD DOWN TOOLING COST

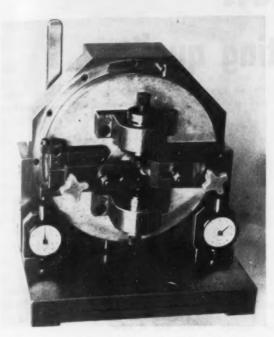


FIG. 2—Fixture used for boring and grinding the holes in the ears. After boring part undergoes several other operations, including slotting, and then is returned for grinding.

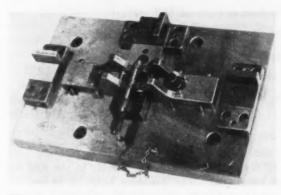


FIG. 3—Spherical groove is milled between the ears in this fixture. When fixture is turned 90° , a second milling operation is performed. Gage blocks on the fixture are used to set the tools for the roughing and finishing cuts.

to provide support. The second operation in this fixture uses a 30° angle cutter to mill the chamfer on the to pinner edge of the slotted ear. An interesting pot chuck is shown in Fig. 5. This holds the part for operations on the shaft. Since the 1-in. diam. used for location is on the same side of the part as the shaft, the fixture is made with the locating surface underneath. The part is inserted under the top of the fixture and clamped with the locating shoulder against the

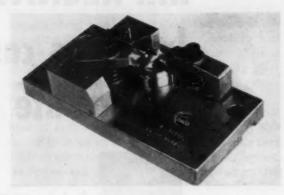


FIG. 4—Dual purpose fixture shown here is used for milling slat in one ear. In second operation fixture uses angle cutter to mill chamfer on top inner edge of the slotted ear.



FIG. 5—While in this pot chuck, two operations are performed on the piece. Shaft is bored and OD ground.

under surface of the top. This brings the top face of the part flush with the top of the fixture, with the shaft projecting up for machining. While in this chuck, two operations are performed: cylindrical grinding of the shaft OD, and boring of the shaft.

One of the trickiest jobs on this part is putting the slot in this shaft after it is bored and ground. Part of the slot walls must be tangent with the shaft bore. It is necessary to bore the hole to the top tolerance limit and mill the slot to the low limit. This leaves metal for use of a shaper to square the slot corners while still having the sides tangent to the bore walls. The slot is finished by shaving with hand movement of the shaper head.

A special drill jig holds the piece at an angle for making the angular slot in the main body. An offcenter bushing is used. Turned one way, it guides a drill to break out one side of the slot. Turned the other way, it guides the drill to the other side of the slot.

IMPREGNATION Improves casting quality, Service life



By J. B. Cantwell President Sealmore Corp. Muskegon, Mich.

Manufacturers today are turning to casting impregnation to improve casting quality, extend service life, cut rejects. While not a new idea, impregnation by modern vacuum-pressure methods as used at Sealmore Corp., Muskegon, Mich., has provided a more effective method of sealing microporosity and casting voids. Air in voids is evaporated under high vacuum. Sealant, a mixture of 500 mesh metallic flour in sodium silicate is introduced until castings are covered. Then 100 psi air pressure is applied. Result: A below surface, invisible impregnation. Castings stand higher operating pressures, and working temperatures are higher than with plastics.

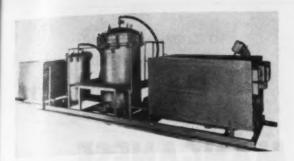
mpregnation of castings is not new; however, as it is known and used today, it is a new application of an old idea.

For years the telephone companies and power companies impregnated their utility poles. Automotive service establishments have used a form of impregnating to repair cracked blocks and heads for a long time.

The impregnation method used before vacuumpressure was an expensive and awkward method. To fixture each casting and close all inlets and outlets is difficult and expensive. Even discounting this, there were castings that would not seal merely by filling the cavities and applying 600 psi pressure to force the sealant material through the pores.

The reason for these earlier failures could be found by cross-sectioning the area that did not seal. In almost all instances of failures, a void was found below the surface of the casting. Upon applying high pressures, the air in the void was compressed. The pressure built up in the void was equal to the pressure being exerted to force the sealant material through the pores. When the pressure was released, the compressed air in the void merely pushed the sealant out. The attempt to seal the casting, was, consequently, a failure.

The only way to fill voids and, thereby, save valuable castings is to evacuate the air from the void. This is done by placing the entire casting in a sealed tank and drawing 29½ in. vacuum on the tank for a time long enough to draw all air from the pores and voids of the casting. Then, by a series of valves, the sealant material is introduced. The sealant completely covers the casting. Valves are closed, an air line coupled to the tank and 100 psi pressure applied.



MODERN IMPREGNATION machinery at Sealmare Corp., Muskegon, Mich., includes vacuum equipment, a method of admitting sealant to the vacuum chamber, and an air pressure system by which external pressure can be applied to the castings while covered with sealant.

After a predetermined time, pressure is released and sealant returned to the storage tank. The casting is then removed from the tank, rinsed of all sealant material on the surface and allowed to dry.

The sealant used in the impregnating process must, of necessity, be a material that is adaptable to the greatest number of castings. One of the first materials used was sodium silicate. The limitations of sodium silicate necessitated the use of a compound containing other ingredients, for example, using sodium silicate as a vehicle or carrier.

This newer material has proved to be a versatile impregnant. Some of its advantages over other materials are (a) low cost (b) ease of handling (c) simple rinsing, and (d) air drying.

As mentioned above, the impregnation material used by Sealmore Corp. consists of a mechanical mixture of 500 mesh metallic flour and sodium silicate, in which the latter is used as a vehicle for the metallic flour.

Porous areas usually have rough surfaces. The presence of metallic flour in the impregnating material improves adhesion to these surfaces.

Castings impregnated with this material have been subjected to pressures as high as 9000 psi for $2\frac{1}{2}$ hr with no leaks. In heat tests, it was found the material would return to a liquid state at 2000°F .

This material is impervious to most chemicals, solvents, salts, etc. It is fungus-proof and does



IMPREGNATION helps eliminate leakage, microporosity problems. Typical leakage areas are indicated in white on aluminum sand casting, left, where heavy and thin sections blend; and in brass castings shown at right.

not retard electrical properties. Probably the most important of its characteristics is its adaptability to different metals and alloys.

Castings impregnated with metallic flour and sodium silicate offer superior resistance at elevated temperatures. Whereas castings impregnated with plastic may have a limiting operating temperature of 400° to 500°F, impregnation with metallic flour and silica raises the permissible operating temperature under many conditions of service to as much as 700°F. Impregnated bronze castings operating under 100 psi at 200°F have shown no indication of deterioration after more than 100 hr of service.

The ideal time to test and salvage a casting is when it is in a rough state. Unfortunately, this cannot be done in all cases. In the cases where machine operations have already been performed, the process can be applied without changing critical tolerances. In other words, the impregnating is invisible; all sealing is done below the surface.

Consider end use first

The size and shape of the casting, distribution and size of any porosity and the end use of the casting must be considered before a decision is made to impregnate castings. Microporosity, although general throughout the casting, can be successfully closed by modern impregnation methods. Several suppliers of die castings, for example, who have periodically encountered porosity in their castings, have recently decided to impregnate 100 pct of their production. In this case, the cost of impregnation is offset, entirely or in part, by the elimination of inspection.

Particularly where a relatively large amount of machining has already been performed, impregnation may be the best and most economical means of recovering a substantial investment in machine hours in a batch of castings.

While no hard and fast rule can be laid down about the cost of impregnation, as a general rule, the cost will not exceed 25 to 50 pct of the previously incurred foundry cost.

Impregnation is not a cure-all. The process is designed primarily to seal micro-porosity and, therefore, has definite limitations. However, when used in conjunction with dot-welding and cold weld, limitations of the process are greatly reduced. Welding can often be done in cases where there are shrinks, blows, or sand holes too large to fill by impregnation, but there must be an opening to the void. Penetration to a depth of 0.30 to 0.40 in. is possible using this method.

Acceptance of impregnation is gaining rapidly as a means of saving not only the casting, but also valuable machine time. The military has set forth specifications covering impregnation under MIL-I-6869.

It is not possible to describe a standard procedure for impregnating all kinds of castings. Each casting is an individual problem and must be treated as such.

ELECTROLYTIC MANGANESE ACCEPTANCE GROWS



By C. L. Mantell
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Electro Manganese Corp.
Knoxville, Tenn.

More and more metals producers, ferrous and nonferrous, are using electrolytic manganese. Over 40 million lb of this high purity, 99.97 pct Mn, product has reached the market since 1940. It has found favor as a nickel substitute and has opened a whole new field of manganese based alloys and permitted higher manganese content in existing alloys. Supplied as a chip, it is the end product of an electrowinning process. Its freedom from carbon and other foreign elements is of special advantage in steel production. Iron chromium manganese steels show high resistance to corrosion and work harden more readily than the stainless steels—a factor where rigidity is needed in large sections.

Forty million lb of electrolytic manganese have been produced and consumed—most of it since 1940. High purity of manganese made by this process, plus unusual physical properties, are steadily pushing production and sales upward, Fig. 1. A whole new field of manganese based alloys, and new higher manganese contents in existing alloys, ferrous and nonferrous, is being uncovered.

Electromanganese, as distinguished from the iron-manganese alloy or ferromanganese used by the steel industry, and other manganese ores and alloys used industrially, is the pure metal from an electrowinning operation.

Metal of 99.77 plus pct purity has given the metallurgist an alloying element which insures uniformity and often improves mechanical properties. A typical analysis is given in Table I. From 60 to 75 pct of the product goes into steel production. The balance goes into nonferrous alloys of copper, aluminum, magnesium and the nickel-base alloys, and into chemicals. Manganese is used either as a scavenger deoxidizer or as an alloying element in more alloys than any other element.

Pricewise, electromanganese is at a disadvantage. Largest consumption of manganese is as standard ferroalloy, of the analysis given in Table II. While statistics are incomplete, standard ferromanganese, 7 to 8 pct C, accounts for about 96 pct of manganese consumption. This does not include spiegel and other low-grade products. Medium-carbon ferralloy, 1.5 pct C, is used where carbon, phosphorous, sulfur and

CHEMICAL ANALYSIS OF ELECTROMANGANESE¹

Manganeee			99.9+
Sulfur trioxide			0.004 0.0138 none none none
Iron		less than	0.001 0.001 0.001 0.001 0.001
Metals absent by speci Aluminum Antimony Arsenic Cadmium Chromium	trographic analysis: Cobalt Lead Molybdenum Nickel Potassium	Silicon Tin Titanium Tungsten Vanadium Zine	

TABLE II MANGANESE AND FERROMANGANESE

	Typical Analysis, Pct									
Product	Mn	Fe	Si	P	C					
Electrolytic manganese	Min 99.88	Max 0.001	Net found	Not found	0.004					
Manganese metal (Thermit process)	95-98	2.0-2.5	1.0-1.5	7	0.06-0.20					
Low-carbon ferroman- ganose, special grade	Apprex 90	Balance	1-2	Max 0.06	Max 0.07					
Low-carbon ferroman- ganese, regular grade	80-85	Balance	1-2	Approx 0.18	0.10					
Medium-carben ferre- manganese	80-85	Balance	Max 1.5-2.5	?	Max 1.5					
Low-iron ferromanganese	85-90	Max 2.0	Max 3.0	7	7.0					
Standard ferromanganese	78-82	Balance	Max 1.00	Max 0.35	7.0					

iron limits permit. Both the standard and medium grades enjoy a price advantage over electrolytic manganese.

It is with grades other than standard and medium-carbon ferromanganese that electromanganese competes. These special and low-carbon grades, 0.1 pct C, are produced by long established multistage smelting practice. The operations require high metallurgical skill. Ores of proper manganese-iron ratio and favorable analysis, particularly with respect to iron and phosphorous, are needed.

With the exception of pyrometallurgical manganese, now a minor factor, the electromanganese price disadvantage ranges from 2¢ per lb, packed and delivered, for low-carbon special grade, to over 13¢ for low-iron ferromanganese. Despite this, electrolytic is used in competition with all of these lower priced grades.

Production and sales rise steadily

Since 1940, growth in both production and sales has been steady. The price of manganese metal had dropped from 40¢ per lb for a less pure pyrometallurgical or aluminothermic process metal in 1939 to 28¢ for electrolytic, carload lots delivered in 1949. In August, 1952, due to increased costs, the price rose to 30¢.

Growing importance of electromanganese is stressed in a recent report by the U. S. Bureau of Mines.¹ In tests carried on over a number of years by industry with United States government production of manganese, over 1 million lb of electromanganese were used.

Principal virtue of electrolytic managanese is its freedom from carbon. Consequently it is of great advantage in making low-carbon steels where low or medium-carbon ferromanganese is used ordinarily. Heat time can be reduced. Elongation is slightly increased and tensile strength lowered. On killed deep-drawing steels, slightly improved performance is noted, result-

ing in lower scrap loss. Based on performance, it has been suggested as valuable in steels for difficult deep-drawing jobs.

Experience has shown electrolytic manganese can be added with equal or superior results to basic openhearth steel if added to the ladle. In the case of ingot iron and extremely low carbon steels, manganese recoveries are erratic owing to the high degree of oxidation of the melt. With this exception, recoveries of electrolytic manganese are at least the equivalent of ferrogrades.

Suggested for stainless welding rod

For stainless steels, particularly welding rods, electrolytic manganese would be highly desirable because of freedom from phosphorous and carbon. For making stainless steels with very low carbon contents, electrolytic manganese is desirable. When stainless steels are made directly from chromium ore and stainless steel scrap, it is used exclusively.

In the regular manufacture of stainless steel, electrolytic manganese has been used in some cases. Manganese recoveries are about 90 pct for both electrolytic and ferro grades. No differences in physical properties are apparent other than those due to closer control of carbon and phosphorous.

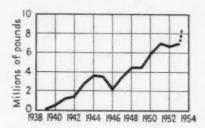


FIG. 1—Production and use of electrolytic manganese is rising steadily, 1952 output may top 8 million lb.

"In some cases operators felt superior physical properties were obtained . . ."

Some question had been raised in regard to hydrogen content. It has not been established with certainty that occasional wildness in heats or poor arc stability in welding experiments were due to hydrogen in the electrolytic manganese.

Normally electromanganese contains 150 parts of hydrogen per million. This is no problem for ordinary uses in the melting process. Where needed, metal is available with hydrogen content of about 5 ppm.

Electrolytic manganese has proved satisfactory for alloy saw, chisel, and die steels by the basic electric process. Manganese recoveries were complete. Recoveries of 100 pct are also obtained in low-alloy steels. The metal has also been used successfully in Hadfield manganese steel.

In acid electric furnace manufacture of steel castings, manganese recoveries for electrolytic and ferro grades are equivalent when chips are added properly. In some cases operators felt superior physical properties were obtained with the electrolytic product. Castings may contain slightly more hydrogen, but no harmful effect on finish has been noted.

Lower carbon content

Acid bessemer screw steel treated with electrolytic manganese has rolling properties superior to the regular product. It is possible to obtain a lower carbon content while maintaining proper manganese content. Manganese recoveries are equivalent to those of ferro grades when coal is added ahead of the electromanganese as the stream of blown metal flows into the ladle.

Supplied as a cathode chip, Fig. 2, about



FIG. 2—End product of an electrowinning operation is this high purity manganese chip about 1/16 in. thick.

1/16-in. thick, electromanganese has a maximum bulk density of 178 lb per cu ft. It is produced by an electrowinning operation, Fig. 3. Manganese ores, if not already soluble, are reduced. Manganese contents are extracted by a sulfuric acid leaching solution which is an anolyte from the electrolytic cells.

The leach solution, after increase in manganese content and decrease in acid, is purified. After adjustment it becomes a feed liquor to the deposition cell where insoluble anodes are used. The feed liquor enters the catholyte chamber of a two-compartment diaphragm cell where the manganese content of the feed is stripped. The manganese metal is plated on the cathode, Figs. 4, 5, and the solution passes through the diaphragm to become part of the anolyte. The anolyte returns to leach fresh ore.

Impurities removed

In contrast to the special ore requirements for electric furnace processes which produce a less pure metal, a wide variety of ores may be used.

In preparing electrolyte from which metal is deposited, solution impurities such as iron, arsenic, antimony, tin, lead, nickel, cobalt, molybdenum, silica, aluminum, calcium and magnesium are removed.

Physical properties of manganese, a grayish white metal, are summed up in Table III. Vapor

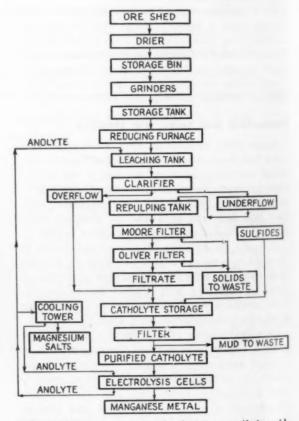


FIG. 3—Manganese ores are leached by a sulfuric acid solution, an analyte from the electrolytic cells.

PROPERTIES OF MANGANESE METAL

Anomic number	25
Atomic weight (1938)	54.93
Atomic weight (1999)	7.44
Denoity a/cm3 at 20°C (88°F)	
Density, lb/in 3 at 88°F (20°C)	0.268
Atomic volume, cm3/g atom	7.4
Melting point	(2273° +F)
Metung point	0°C 3904°F
Boiling point	D.C. 2804 L
Specific heat cal/g/°C at room temperature equals	
bfu/lb/°F at room temperature	0.107
Latent heat of fusion, cal/g	64.8
Latent heat of fusion, btu/lb	116.64
Linear coefficient of thermal expansion/°C at room temperature.	23
Linear coefficient of thermal expansion, C at room temperature	40
Linear coefficient of thermal expansion/°F at room temperature	12.8
Type of crystal lattice	(complex)*
17 TO 1 TO	0.004 8
Lattice constant (Å = 10-8 cm) 20°C (68°F) a6	5.894 A

Ordinary form at 29°C; other modifications known or probable at other temperatures.

pressure of manganese at the triple point² is as follows:

VAPOR PRESSURE OF MANGANESE AT TRIPLE POINT

Vepor Pressure mm Hg	Triple Point Deg C
1.0	1280
8.8	1244
0.001 Sublimes At	740

Rate of vaporization increases under a strong electric arc in vacuum. At 800°C it doubled; at 900°C it increased 72 pct; at 1000°C, 8 pct. Above that there was little effect. In a 24 pct Mn iron-manganese alloy the manganese alone vaporized.

In 1925 three allotropic forms of manganese, alpha, beta and gamma were discovered.^{3, 4} Transition points for manganese made by vacuum distillation were determined using thermal analysis as well as density and dilatometric methods.^{5, 6} Later study indicated three discontinuities in both thermal data and that obtained by magnetic susceptibility methods applied to manganese produced by vacuum dis-



FIG. 4-Typical cathode with manganese deposit.

tillation. Existence of a fourth, delta, form of manganese was suggested.

Changes in hydrogen solubility of pure manganese were studied. From these studies and existing data on heat content, the trasition point temperatures in Table IV were suggested. 10, 11

The alpha and beta forms are brittle and hard enough to scratch glass. The pure metal is not fabricated. A ductile alloy may be made by addition of 2 pct Cu and 1 pct Ni. Gamma manganese, which changes to alpha at ordinary temperatures, is said to be flexible and soft, can be bent and cut with scissors, and cannot be ground in a mortar.

Availability of pure manganese with negligible sulfur, phosphorous and carbon content at a time when nickel is less available, has stimu-



FIG. 5-Portion of cell room for production of electrolytic manganese at Electro Manganese Corp. plant.

"Iron-chromium-manganese steels . . . have high resistance to corrosion . . ."

TABLE IV

SUMMARY OF DATA ON ALLOTROPISM OF MANGANESE

Density	Form	Stability Range Deg C	Crystal Structure
7.4	Alpha	Below 730°	Body centered cubic, 58 atoms to unit cell, a = 8.894 Å
7.29	Beta	730°-1100°	Body centered cubic, 20 atoms to unit cell, $a = 6.300 \stackrel{\circ}{A}$
7.2	Gamma	1100°-1138°	Face centered tetragonal, 4 atoms to unit cell, a = 3.767 Å c/a = 0.934
	Delta Liquid	1138°-1245° Above 1245° ± 3°	2 - 0.707 A 0/8 - 0.60

Transition Points

From	To	Temperature Deg C	Condition
Alpha	Beta	727° ± 3	Heating Cooling Heating and cooling Heating and cooling Heating and cooling
Beta	Alpha	692°-665°	
Beta	Gamma	1100° ± 3	
Gamma	Delta	1138° ± 3	
Delta	Liquid	1245° ± 3	

lated greater interest in and production of iron-chromium-manganese steels and irons for structural purposes, railroad cars and the like. These materials, of 16 to 20 pct Cr, 8 to 10 pct Mn and about 0.1 pct C, have high resistance to corrosion.

To some chemicals they are less resistant than the 18-8 chrome-nickel steels but they have greater resistance to gases containing sulfur compounds. In structural shapes the 18 pct Cr, 9 pct Mn materials workharden more readily than the 18-8 chrome-nickel steels. Where stiffnes and rigidity of large, long sections are needed—as in building railroad cars—this is an advantage.

Free from inclusions

Steels of 17 to 19 Pct Cr, 8 to 10 pct Mn, 0.75 to 1 pct Cu, 0.1 pct C, and 0.2 to 0.5 pct Si have excellent resistence to atmospheric corrosion and compare well with stainless steels.

These steels are resistant to all concentrations of nitric acid at temperatures up to and including the boiling point. They are relatively free from attack by many industrial chemicals, and many commonly used food products. Owing probably to their high-manganese content, they are relatively free from inclusions, further inhibiting pitting.

Electromanganese has become the standard form for manufacture of the instrument alloy Manganin, 11 to 12 pct Mn, 3 to 4 pct Ni, balance Cu, and for the high resistance nickel-chromium alloys with about 2 pct Mn.

High-manganese alloys sometimes show para-

doxial properties. An alloy of 80 pct electromanganese, 20 pct Cu has a tensile strength of 110,-000 psi, elongation of 3 pct, Brinell hardness of 200, electrical resistance of 140-micro-ohm centimeters and a high vibration damping capacity.

Electromanganese has commanded attention as a replacement for nickel in the copper-zinc-nickel alloys known as the nickel silvers, widely used in World War II, and it has been widely used in stainless steels as well as other ferrous and nonferrous materials.

In aluminum alloys, electromanganese competes with special low-iron, high manganese ferroalloys, but appreciable quantities are used for 28, 25S and the like. In magnesium, electromanganese competes with manganese chloride added to the reduction furnace. Because of its purity however, appreciable quantities have been used for magnesium alloys, despite greater melting difficulty.

Manganese is an important constituent in alloys of aluminum, copper, iron, magnesium and zinc, as well as more complex systems involving these metals. Manganese additions to brasses, bronzes, and nickel silvers have received considerable attention.

In powder metallurgy, manganese has been successfully applied as a constituent of contacts, preformed catalysts and sintered alloys. Its pure form has made it a preferred material for chemicals of high purity.

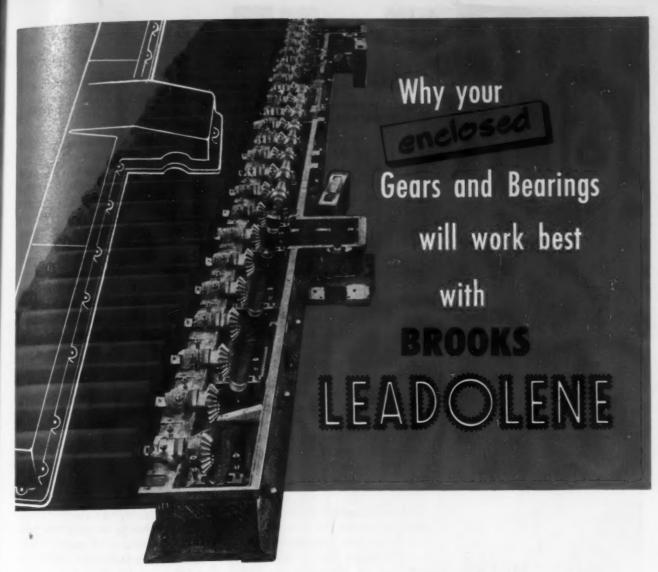
The binary alloy systems of manganese which have been studied cover a wide range. Much of the work was done with less pure manganese. Systems studied are those of aluminum, antimony, arsenic, bismuth, boron, carbon, copper, gold, iron, lead, magnesium, mercury, molybdenum, nickel, nitrogen, phosphorous, platium, selenium, silicon, silver, tellurium, thallium, tungsten and zinc. With the availability of high purity metal, many of these systems need review.

Development of electrolytic manganese has been entirely American. Although a small-scale German and Japanese production was reported during World War II, these plants operated for only a short period on short deposition cycles. Quality of their metal was poor. Present American productive facilities are being expanded to keep pace with increased demands.

References

- Bur. of Mines Report No. 4361, "Electrolytic Manganese Tests in Cooperation With Industry," Frederick Sillers, Jr., May, 1952.
 - * Baukloh and G. Altlaid, Metallwirtschaft 38, 651, 1939.
 - 3 A. J. Bradley, Phil. Mag. 50, 1018-1030, 1925.
- 4 Von Arne Westgren and Gosta Pharagmen, Z. Physik. 33, 777-788, 1925.
- ⁵ M. L. V. Gayler, J. Iron and Steel Inst., 115, 393, 1927.
- 6 H. Yoshisaki, Z. Krist. 72, 406, 1929.
- ⁷ G. Grube, K. Bayer, and H. Bumm, Z. Electrochem. 42, (11) 104, 1936.
- 8 G. Grube and O. Winkler, Z. Electrochem. 42, (11) 814, 1936.
- A. Sieverts and H. Moritz, Z. Physik. chem. 180, (4), 249-63, 1938.
 E. V. Potter and H. C. Lukens, Metals Technol. T. P. 2032, Sept.
- 1946.

 11 B. F. Naylor, J. Chem. Phys. 13, 329-32, Aug., 1945.



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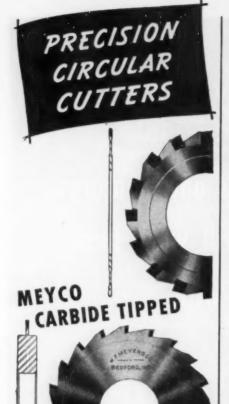
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Technical Briefs

TITANIUM:

Use in metal-oxide rectifiers opens new field for metal.

A new type of rectifier recently developed by the National Bureau of Standards promises to be the first major improvement in metal-oxide rectifiers since their introduction in 1926.

Made of a layer of semiconducting titanium dioxide, a sheet of titanium metal, and a counterelectrode of some other conducting metal, the new rectifier is still in the experimental stage.

Good At High Heat—Preliminary investigations have shown that the units withstand voltage in the reverse direction reasonably well and that their properties are satisfactory at elevated temperatures. The rectifiers are prepared by forming a layer of titanium dioxide on a sheet of titanium metal and then applying a counterelectrode to the oxide surface.

Two Methods — Two processes have been devised to form the oxide layer. By the one the titanium metal is heated first in oxygen gas and then in hydrogen gas. The other—an improved version of the first—consists in heating the titanium metal in steam at elevated temperatures.

In the first process, ½-in. squares of 0.020 in. commercial titanium sheet, are polished and heated in oxygen gas to form the coat of titanium dioxide. A thin, tightly adherent coat of oxide is obtained after a treatment at 800°C for about 2 hrs.

Poor Conductor—The oxide layer formed in this manner becomes a very poor conductor of electricity; it is made into a semiconductor with a much greater conductivity by heating in hydrogen gas, which causes a loss of oxygen. A study of the reaction showed that heating in one atmosphere of hydrogen at 500°C for 15 min would produce sufficient conductivity.

After the hydrogen treatment, a

counterelectrode is electroplated on the rectifying surface of the oxide by ac plating techniques.

Water Vapor—A second process, using water vapor, produces the semi-conducting oxide layer on the metallic titanium in one step. The most satisfactory films are formed by heating similar titanium plates in steam at 600°C for about 3 hrs. Counterelectrodes are then electroplated to form a finished unit. This process produces a rectifier with improved electrical properties without the undesirable embrittlement accompanying the other method. The units can withstand a reverse voltage of about 20 v per plate.

RESISTANCE WELDING:

Method gives greater strength, more uniformity in welds.

Greater strength and uniformity in sheetmetal resistance welds is reported for a process recently developed by G. R. Brolaski, Rohr Aircraft Corp., Chula Vista, Calif.

Thinning of sheetmetal caused by pressure of the electrodes before and during welding has been a frequent source of metal failure. This is especially true with seam welding.

Protector—The new device uses a protector between the electrode and the surface of the parts being welded. The protector is a bar or strip of metal similar to the electrode, wider than the electrode tip, and long enough to cover the entire weld.

The bar is thick enough to withstand pressure of the electrode without bending or warping. One side of the bar is shaped to conform to the part being welded. Thinning of sheetmetal at the weld area has been eliminated.

Tubular Parts — Tubular parts may be welded more accurately by this method. Severe warping or bending of the sections forming the tube, due to pressure of the electrodes on the curved surfaces, is prevented.

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Polished chrome piston rods held tight in unusual clamping fixture.

How to hold polished chrome plated steel piston rods tight enough to permit fast, economical assembly of piston and followers was the problem faced by Planet Products Corp., Cincinnati.

An unusual, booster - powered clamp with a 15-ton squeeze solved the problem. The unit was designed and built by Planet in conjunction with Miller Motor Co., Chicago, maker of air and hydraulic equipment.

Uses Small Pump—A small inexpensive hydraulic pump operating at only 250 psi powers the entire device. Clamping pressure is obtained by use of a standard 5-in. bore 6.25 to 1 fluid pressure booster.

This drives a 5 in. bore high pressure hydraulic cylinder, the piston rod of which operates the movable clamping member.

Assembled As Unit — Booster and cylinder are assembled integrally as a single compact unit with no high pressure piping used



CHROME POLISHED steel piston rods are held in 15-ton grip during assembly operation with this unusual hydraulic vise at Planet Products Corp., Cincinnati. Brass jaws prevent scratching of polished surface.

between them. Brass clamp jaws prevent marring of the polished rod.

A tightening adapter is hinged to swing away from or toward the clamped rod. A circular tightening disc is turned clockwise or counterclockwise by ratchet action of 2 small hydraulic cylinders.

Turn Page

C Z 8 0 0 z V Demands ۵ 2 2 . 5 S W -Z 4 vi 0 < ٠ Z 0 8 ~ 4 U I 0 I Z 0 8 ~ 4 3 VALLINGFORD 0 WALLINGFORD, CONNECTICUT, U.S.A.



Magnaflux plays an important part in building safety into jet engines. With every part a critical part, it is essential that cracks and flaws be discovered at time of production and throughout maintenance, no matter how minute or well hidden.

That's why all jet engine manufacturers use Magnaflux to find hidden defects in metals—to show up cracks too small for the human eye to see. Magnaflux makes invisible cracks instantly visible, even when below the surface, in the making and maintenance of many products—from automobiles to locomotives, from sewing machines to sleeping cars!

Magnaflux is low in cost, nondestructive—and so fast that it performs at production line speeds!
... For detailed information write for literature—how Magnaflux saves money and lives, described on request without obligation.

MAGNAFLUX





MAGNAFLUX CORPORATION
5902 Northwest Hwy. • Chicago 31, Illinois
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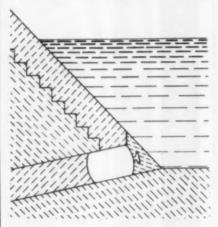
Technical Briefs

STEELMAKING:

Unusual method for closing openhearth tap-holes developed.

A novel method of closing openhearth tap-holes, developed by a Youngstown steelman, is reported to give a cleaner tap-hole, eliminate undesirable erosion and give quicker taps. The faster taps help maintain steel composition purity.

A bag is placed in the tap-hole from the exit end and pushed up toward the furnace end. Generally made of a flexible fireproof material such as asbestos or wire



FLEXIBLE BAG (no crosshatch) is set up in tap hole of an openhearth furnace and surrounded by refractory materials. Horizontal crosshatch at top indicates steel bath.

fabric, the bag is cylindrical and slightly longer than wide.

Adapts To Contour — Since the bag is flexible, it adapts itself to the contour of the tap-hole. It is filled with semi-refractory material, relatively soft and non-hardening and preferably possessing gassifying characteristics when subject to the temperature of the furnace.

One satisfactory material is raw dolomite, but mixtures of burnt and raw dolomite, mixtures of crushed burnt dolomite, magnesite, chrome ore, or other refractory with coal may also be used.

Moved In Cradle — Filled with the described material, the bag can be moved into tap-hole position by means of a curved sheet metal cradle carried upon a long bar. The innermost end of the bag is generally positioned about 2 to 10 in. from the innermost end of the tap-hole.

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A highly refractory material, such as burnt dolomite is shoveled in from the front of the furnace to cover the innermost end of the bag and close the end of the tap-hole.

Bag Expands—A highly refractory material, such a burnt dolomite is then tamped into the remainder of the tap-hole from the exit end. This causes the bag to expand outwardly into tight contact with the tap-hole. The discharge end of the tap-hole may be closed with a plug of clay in accordance with known practice.

During a heat the burnt dolomite hardens and solidifies over the innermost end of the bag. Heat penetrates into the material in the bag and partially gassifies the contents to create pressure toward the furnace end of the tap-hole. This prevents the molten steel from penetrating down through the refractory layer.

Report on Aluminum Conductors

To answer needs for accurate information about aluminum electrical wire and cable, the National Electrical Contractors Assn. has prepared a "Report on Aluminum Electrical Conductor." Industry and government construction agencies cooperated in supplying material for the report. Copies are available from NECA or from Thomas & Betts Co., Elizabeth 1, N. J.



We chart the production here individually. I got the idea while lying in a hospital bed.

BIBLES AND BUSINESS:

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Manufacturer mixes machines and missionary work in Liberia.

Spreading the Gospel is a prime purpose in the career of R. G. Le-Tourneau, builder of construction machinery. Recently a converted LSM landed in Liberia with a \$700,000 cargo of construction machinery as part of a LeTourneau sponsored earn - learn program. The project was undertaken by newly created LeTourneau of Liberia, Ltd.



TREE SAW to aid in Liberian land-clearing operations is loaded aboard by built-in topside crane. Equipment is easily moved from hatch to shore.

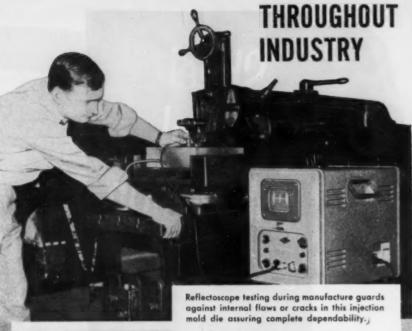


SHIP is converted LSM. Converted at Vicksburg, Miss., the vessel carried a \$750,000 cargo of construction machinery for use in building roads, clearing land in Liberia.

Mr. LeTourneau believes the best way to spread the Gospel is to help people help themselves. "By teaching them to use machines . . . we can show them more than we can tell them about the right way to live," the machinery maker says. And he's backed up this belief with money.

Cargo-Purchased and outfitted at a total cost of \$250,000, the ship was loaded with a cargo of con-

Turn Page September 18, 1952





Reflectoscope testing prior to machining eliminates wasted time and loss of materials resulting from faulty metal.



Testing this large finished die assures freedom from internal defect and possible failure-in-use.

Assure CUSTOMER SATISFACTION Eliminate **WASTE • REJECTS**



ULTRASONIC TESTING

The Chicago Impression Die Company — makers of plastic injection mold dies — is one of the many firms throughout industry that has found two important benefits from Sperry Ultrasonic Reflectoscope testing.

First — Testing of raw materials before processing eliminates the many man and machine-hours that are wasted when hidden flaws or inclusions are discovered during manufacture. Second — Reflectoscope testing the finished products assures that no flaws have developed that might cause failure in use. Customer acceptance and satisfaction is assured.

Simple, economical and effective in operation, the Reflectoscope penetrates up to 30 feet in solid metal with an ultrasonic beam that dependably detects and locates hidden internal flaws, defects and inclusions.

Write today for complete information; learn how you can reduce testing costs and improve quality control in your plant. The Sperry Reflectoscope is available through Sperry's convenient, economical, in-plant Testing Service, conducted by Sperry's experienced Inspection Engineers. Ask for details concerning sale or rental of the Sperry Ultrasonic Reflectoscope.

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Cabinets

Technical Briefs

struction machinery valued a \$700,000.

The LSM left New Orleans July 29, refueled at San Juan, Puerto Rico, and 16 days later landed in Liberia.

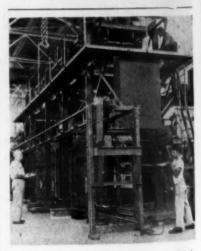
The expedition is headed by Mr. and Mrs. Gus Dick of Longview, Tex. Mrs. Dick is the daughter of Mr. and Mrs. LeTourneau. Mr. Dick is a civil engineer.



LEADERS of the Liberian expedition, Mr. and Mrs. Gus Dick, talk over plans with R. G. LeToureau, sponsor of the expedition.

Will Clear Land-Construction machinery also will be used to build roads and clear land for agricultural purposes. It is anticipated that products such as sugar, cocoa, coffee, rice and rubber can be raised on the developed land.

LeTourneau expects to market such things as minerals, mahogany, rosewood and ironwood.



GUN BARREL FURNACE is a completely packaged unit, including automatic loading and unloading devices. Furnace, shown during assembly at Lindberg Engineering Co.
plant, is 42 ft long x 10 ft wide x 19 ft high.
Barrels are hardened, quenched and drawn in pass through unit.

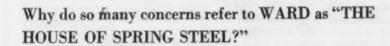
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Write for New Bulletin F-3, SHEET & PLATE **FABRICATION**





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Over the years, satisfied users throughout the United States and Canada knew they could obtain the proper grade of SPRING STEEL for the intended application.

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If WARD is not your TOP SOURCE for SPRING STEEL, then we respectfully solicit your consideration with the confidence, once you patronize WARD, you will be among the countless steady users of this highly specialized product.

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September 18, 1952

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SMALL STAMPINGS

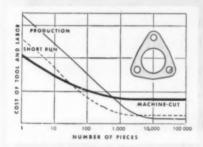
A COST-SAVING, VERSATILE APPROACH TO THEIR MANUFACTURE

Possibly you've always thought that a quick look at the quantity involved decides how a stamping shall be made. Sometimes it is done that way but it isn't the sure way to lowest costs.

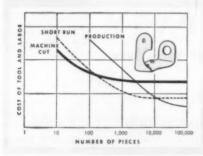
A more scientific approach by the STAMPINGS DIVISION of the Laminated Shim Company in Glenbrook, Connecticut frowns on the term "short run stamping." There is what is known as the short run method but there is no definite dividing point between short run and production quantities. Contour, tolerances, material, many other items all affect the manufacturing method when costs are being carefully figured.

NO ONE METHOD IS ALWAYS CHEAPEST; THREE ARE NEEDED

Machine-Cut Method: The STAMPINGS DIVISION goes one step further than Short Run and Production Methods. The Machine-Cut Method, though not strictly a stamping operation is a valuable addition to stamping procedure. Custom built slitters, cutters, saws and files use experience-gained techniques to fashion the smaller quantities of parts. No dies are made; only stock punches are used. Obviously labor cost is understandably high but there is no tool charge.



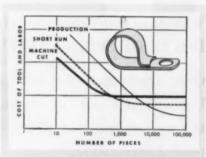
Short Run Method: As quantities increase (and depending upon the complications of contour, material, etc.) the economy of a temporary blanking die must be considered to eliminate the labor expense of machine-cutting. When this point is reached, manufacture is by the Short Run Method and the blanking is supplemented by other bench press operations. Here labor cost is at a medium level but a modest tool charge is incurred.



Production Method: As quantities increase the Production Method using standard dies with high speed automatic presses becomes more attractive. A relatively high tool charge can then be amortized over a great number of parts. Labor charge is negligible.

The Production Method as developed by the STAMPINGS DIVISION is offering unusual cost saving possibilities because of the new low-cost, full service Hecht-type die developed by the company for certain applications.

It is interesting to note that sometimes a very small quantity of parts would require a standard die because of complications or close tolerances or tough materials involved. Thus occasionally a very small quantity goes into the production classification.



LOWEST COST IS ASSURED WHEN SUPPLIER HAS ALL THREE METHODS

The illustrations show typical stamped parts along with relative costs and breaking points for each of the three manufacturing methods. Unless a supplier can offer all three, his costs cannot always be low. For a given quantity, only one method can be most economical.

ONE OR ONE MILLION PARTS FROM SAME SUPPLIER

An important corollary to the above is that an experimental part in small quantities can be handled by the same supplier when full production quantities are needed

Further, it is important that a supplier be fully informed, if possible, on later or total requirements for a given part. As the charts point out, such information will affect manufacturing method and make possible cost reductions.

FURTHER INFORMATION AVAILABLE

An illustrated 12 page brochure describing in greater detail the methods mentioned above is available on request to the STAMPINGS DIVISION

Laminated Shim Company, Inc. 3209 Union Street, Glenbrook, Conn.

-Technical Briefs.

POWDER METALLURGY:

Three methods find wide use for conversion of metals to powder.

Three major methods are finding wide use for conversion of metals to powder for use in powder metal processing—atomizing, reduction and electrolytic deposition.

Droplets — Atomizing is largely used for low melting-points metals, such as lead, tin, aluminum and brass. The metal is melted, poured in a thin stream. As it emerges from the nozzle it is hit with a high-speed stream of air, gas, or water-spray. This creates a shower of tiny droplets which stroke a collector as tiny solid particles of spherical or tear-drop shape. When they hit the collector they are a cold, solidified powder.

Reduction is the most widely used method. Copper, iron, and tungsten are commonly treated by reduction. Oxides of the desired metals are derived from ores by roasting, or by chemical means (as hydroxides from solution). These are then ground in a ball-mill to powder. This is reduced to metal in a hydrogen atmosphere furnace.

Burned—Iron oxides often of Swedish origin, are often heated in the presence of coal or coke. This burns out the air and creates carbon dioxide as a reducing gas.

Copper oxides are usually handled in trays in a hydrogen atmosphere at about 1500°F. The oxygen burns out and leaves copper particles. These are a loosely sintered cake as they leave the reducing furnace but are easily broken into powdered copper.

Electrolytic Deposition — This process is used for many metals but especially iron and copper, and often silver. With respect to copper the cost of the electrolytic and reduction processes is much the same so that the buyer's choice rests often on delivery.

With respect to iron the electrolytic product is more expensive but for some purposes better.

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LINES OF SAFETY SWITCHES MARKETS



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GENERAL PURPOSE

90,000 line designed for residential, commercial and other applications where price is limiting and the service factor is not great.



one line can't do two or three jobs without compromising price and performance!



INDUSTRIAL

40,000 line designed for general industrial or institutional and commercial applications where the service factor is greater and price is an important consideration.

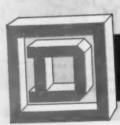
MEETS BOTH GOVERNMENT AND NEMA SPECIFICATIONS FOR TYPE A SWITCHES.



HEAVY-DUTY INDUSTRIAL

80,000 and 50,000 line designed for mass production industries where price is secondary to continued performance under conditions of severe service and maximum safety. The 50,000 line is used where space is limited. BOTH ARE TYPE A but go far beyond those requirements.

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS



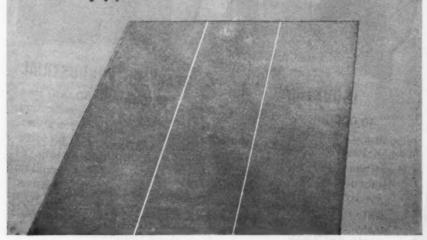
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Follansbee offers the special attention and services which only the flexibility of a compact organization can provide. If you need Cold Rolled Strip Steel, Follansbee merits your consideration as a source for your supplies.

Follansbee brings to the rolling of this staple product its many years of experience as a maker of high quality steel specialties. This means that you can rely on Follansbee to furnish you with Strip that meets your most exacting requirements in Temper, Gauge, and Width.

On your next order for Cold Rolled Strip—or other steels—it will pay you to check with Follansbee.



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POLISHED BLUE SHEETS AND COILS SEAMLESS TERNE ROLL ROOFING COLD ROLLED STRIP

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FOLLANSBEE METAL WAREHOUSES

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-Technical Briefs.

COLD MILL:

Nichols expands aluminum output with addition of 2-high mill.

Installation of an Achenbach cold-reducing mill for production of aluminum sheet has extended operations of the Nichols Wire & Aluminum Co. Nichols recently installed the first continuous casting machine developed for production of aluminum rod.

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The 2-high, 42-in. wide cold-reducing mill is already in operation, using aluminum re-roll stock to produce sheet in thicknesses from 0.060 in. to 0.010 in., up to 36 in. wide.



PLANT INTEGRATION moved a step for ward at Nichols Wire & Aluminum Co. with installation of Achenbach cold-reducing mill.

Plant Integration — Installation of the sheet mill is a step toward fuller plant integration. In rod and wire products, the plant now starts directly with the pig aluminum, by using the Properzi continuous casting and rolling mill for aluminum rod.

Major end products of sheet produced by the cold-mill are aluminum roofing and roofing fixtures. Nichols is one of the world's largest producers of aluminum nails.



I haven't the heart to restore his sanity. He doesn't know a thing about inflation, taxes, Russia or CMP.

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THE IRON AGE

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Case histories have appeal, whether they're about someone's time being pettered at a lathe or at an altar. Success likes success, and "misery ikes company."

An "automatic's" case history is just

an end of a means of machining facility. If you procure the right facilities, good case histories will result in your plant.

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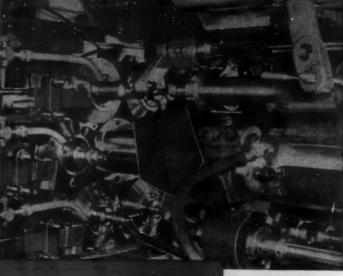
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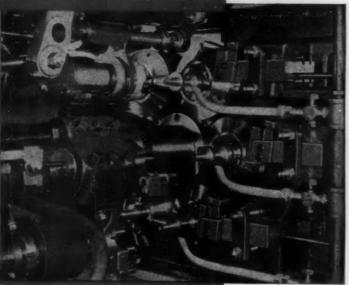
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Front Side of Tooling Area 1-5/8-SIX

THE FACILIT BEHIND THE NEWS

When selecting the best multispindle automatic facility for your needs, you will want to compare all brands. But you should have full information for a thorough comparison. You can have it on CONOMATICS.



Rear Side of Tooling Area 1-5/8-SIX

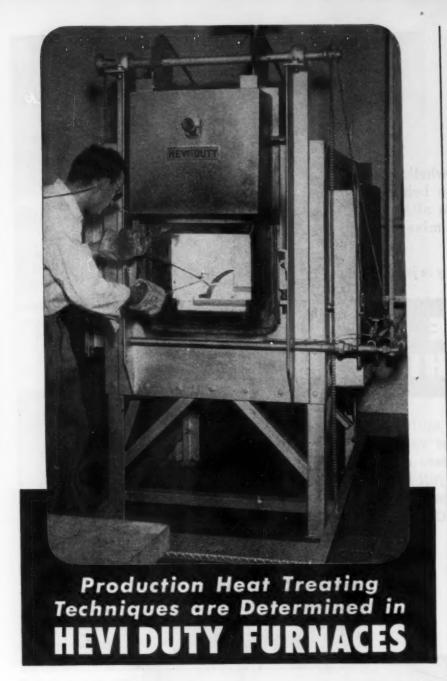


Cross drilling, cross milling, end broaching, end milling, and sawing operations are commonly performed by stopping the work spindles - often a costly procedure. For certain requirements, such as for the broached hole in the piece shown, CONOMATICS have performed all of the operations mentioned without stopping the

A Comparison of ALL Automatics is in favor of Cone



Conomatic CONE AUTOMATIC MACHINE COMPANY, INC. WINDSOR, VT., U.S.A.



A large automotive and ordnance manufacturer uses Hevi Duty high temperature furnaces in its metallurgical laboratory for determining production heat treating cycles.

HEVEDUTY.

These furnaces provide the uniform heat needed in this important work. Temperatures are accurately controlled to 2600° F. For day in day out production or precision laboratory work rugged Hevi Duty furnaces will meet your requirements. Write for bulletin IND-741 today.

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Heat Treating Furnaces... Electric Exclusively
Dry Type Transformers Constant Current Regulators

Technical Briefs.

METAL ADDITIVES:

Cartridge with time-temperature fuse aids in purifying metals,

Metal producers have long recognized the value of treating metals with such highly reactive agents as sodium. Technical difficulties connected with placing the additive in the molten charge however have made metalmen wary of using these additives.

A practical and safe method of treating molten metals with highly reactive additives has been developed. The metals industries can now deoxidize or treat molten metals with highly reactive treating agents. The injector cartridges, equipped with time-temperature fuses, were developed by J. S. W. Bates of Phoenix, Arizona.

Problem— The tendency of addition agents to vaporize suddenly and to violently throw large quantities of molten metal into the air has been a serious drawback to the use of many active addition agents.

Sodium, lithium, calcium and magnesium have been considered dangerous additions to be made to molten steel. Used as addition agents in the center of a cartridge, safe limiting quantities have been found by experiment using the injection method.

Added Gradually—The additive must be released and ejected gradually, before dangerous internal pressures such as might cause explosions are developed and before external dissolution causes the cartridge to rise. The cartridge must have the equivalent of a time-temperature fuse arrangement. Such a cartridge has been developed.

The "Injector" assembly of container or cartridge has a core of additive material, and a time-temperature fuse mechanism to release the additive safely.

Time - Fuse Mechanism — The time-fuse mechanism is in the form of relatively thin spots in the wall of the cartridge. The entire cartridge is made of the same base

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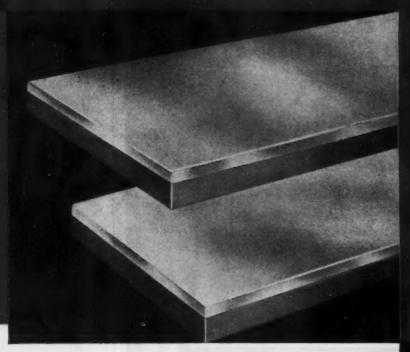
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STAINLESS-CLAD PLATES



stainless steel advantages ...with carbon steel strength ...at lower cost

If you use stainless steel in your fabrication or construction, chances are you can lower your material costs substantially by means of C F & I Stainless-Clad Plates.

In numerous and diversified applications, these plates are giving all the advantages of stainless steel, including prolonged resistance to the corrosive action of acids and alkalis.

C F & I Stainless-Clad Plates are a composite of stainless steel permanently bonded to a carbon steel backing. Easy to fabricate, they will not buckle, crack or peel under the severest forming operations. To order, write or call Claymont Steel Products, Wickwire Spencer Steel Division, Claymont, Delaware.

THE COLORADO FUEL AND IRON CORPORATION—Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION—Oakland, California
WICKWIRE SPENCER STEEL DIVISION—Atlanta * Boston * Buffalo
Chicago * Detroit * New York * Philadelphia

CLAYMONT STEEL PRODUCTS
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THE COLORADO FUEL AND IRON CORPORATION

Flanged and Dished Heads

Carbon and Alloy Steel Plates





Here's what happened during an inside threading operation at an atomic special project. A special carbide cutting tool was being used for the job, which requires a No. 10 Acme thread in steel S. A. E. 1030. Everything went wrong, however. Tools were breaking, and the result was not one piece



was completed.

Mr. Howard G. Frisby, Jr., representative of Choctaw, Inc. Memphis, came to the rescue. He furnished a Wendt-Sonis standard AR style carbide tool bit, turned it up sideways and reground it on the job. Breakage was eliminated, the job finished and tool costs reduced 65%.

YOUR CHOICE OF CARBIDE

When you choose Wendt-Sonis, you select the brand and type of carbide you want. You also select from a complete range of Wendt-Sonis standard tool sizes. All Wendt-Sonis carbidetipped tools have rust-resistant tool shanks made from highest quality steels for greater economy and faster production.

Free! CHIP BREAKER CHART

Contains illustrations of chip-breakers, grinding in-structions and recommendations for their use. Chart size with tab for wall hanging. Write: WENDT-SONIS COMPANY, Hannibal Mo.



HANNIBAL, MISSOURI

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549 West Randolph St.

CARBIDE-TIPPED CUTTING TOOLS
BORING TOOLS . CENTERS . COUNTERBORES . SPOTFACERS . CUT-OFF
TOOLS . DRILLS . END MILLS . FLY CUTTERS . TOOL BITS . MILLING
CUTTERS . REAMERS . ROLLER TURNING TOOLS . SPECIAL TOOLS

Technical Briefs

metal and the thin spot or spots are dissolved away rapidly to expose the additive metal.

In another time-fuse arrangement a fusible plug is used. The metal has a melting point below the boiling point of the additive agent within the cavity. In the case of steel, an aluminum fusible plug may be used with a steel body and metallic sodium as an additive agent in the cavity.

Plug Melts First-If the additive agent is magnesium, the fusible plug in the steel cartridge may be copper. In either case, the pluz melts before the additive agent boils and before any explosive pressures can be developed.

The vaporized additive agent is emitted in the form of jets from the orifices opened by the fusible plug. This jet action causes thorough dispersion of the additive within the bath of molten metal added to the cartridge.

Plan Gouging Demonstration

A process of cutting and gouging metals by using carbon arc and compressed air will be demonstrated at the National Metal Exposition, Philadelphia, Oct. 18 to 24. Known as the Arcair process, the method permits foundries and steel fabricators to remove welds, or casting defects or clean weld roots rapidly. Operating on DC welding current, the simple torch has a self-aligning air jet and adjustable electrode.

Turn Page



nothing in your eye but a gleam."

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OCTOBER 20-24 . PHILADELPHIA,

September 18, 1952

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For cutting time while cutting metal, nothing has ever beaten STAR hacksaw blades, frames, and metal-cutting band saw blades.

Tell your supplier you want STAR – the blades most people buy.

Sold only through recognized distributors

CLEMSON BROS., Inc.

Makers of Hand and Power Hack Saw Blades, Frames, Metal Cutting Band Saw Blades and Clemson Lawn Machines.

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-Technical Briefs

TURBOJET:

Complicated aircraft engine works on simple principle.

The oarsmen in a racing shell who impart forward motion to the shell by applying a rearward force to the water are using the same propulsion principle used in the turbojet engine.

The racing shell, according to John B. Graef of Westinghouse's Aviation Gas Turbine Div., gains forward motion when oarsmen increase the rearward velocity of the water through which the shell is passing.

Thrust—Since the speed of the shell depends upon the size of the oars and the frequency of strokes, the reaction that moves the boat forward — thrust — must depend upon the amount of water, or mass, handled and the extent to which its velocity is increased.

The turbojet engine is a mechanized version of the racing-shell-oarsmen engine, converting chemical energy of fuel into mechanical energy needed to increase the momentum of a portion of the fluid through which it is passing.

Greater Air Mass—It, too, may increase its thrust by accelerating a greater mass of air to the same velocity, by accelerating the same mass to a higher velocity, or a combination of both.

Air is drawn or rammed, depending on speed, into the inlet diffuser. This diffuser changes a part of the velocity of the air into pressure and directs the air into the compressor.

Increased Pressure — The compressor increases the pressure of the air to the point where, upon entering the combustion chamber, the air may be at a pressure of anywhere from 3 to 16 times that in the inlet diffuser, depending upon the designed compression ratio of the engine.

In the combustion chamber, about 25 pct of the air is mixed with fuel and the mixture ignited. Balance of the air is used to cool the metal parts of the combustion chamber.



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Like to spend more time reading and less hunting? Turn to pages 2 and 3 of your IRON AGE
EVERY week and let the Digest of the Week in Metal Working help you find your favorite features.

IT PAYS TO READ
IRON AGE ADS TOO!

-Technical Briefs-

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Thinner, stronger aircraft materials formed on massive machines.

Machines more massive and more powerful than any ever used before in aircraft manufacturing symbolize the approach of a new era in aircraft manufacturing.

Huge new presses and mills are housed in Lockheed Aircraft Corp.'s Hall of Giants, headquarters of a manufacturing revolution, will help the company keep pace with airframe design beyond 1965. Machines are large enough and powerful enough to handle the largest and strongest aircraft metals expected to be developed in that time.

Handle Aircraft Materials-Designs for the machines capable of handling the thin, high strength metals developed by Lockheed engineers working with machinery builders of standard machine tools were not considered adequate.

Major cutting operations are performed by a Giddings & Lewis skin mill-only machine of its kind in the aircraft industry today. Principal parts milled by this dual-purpose machine include integrally stiffened inner wing panels and one-piece skins for the wings of all-weather jet intercep-

Two In One-The skin mill can cut, taper and profile sheets up to 10 ft wide by 32 ft long. The mill combines the effectiveness of two machines in one unit. Formerly, milling and profiling operations would have required separate machines. The machine is 18 ft high x 30 ft wide x 80 ft long. It weighs 200 tons.

The big Cincinnati Hydrotel, rated largest of its type, is another cutting machine in the Hall. It is used principally for machining structural aircraft parts of oddshaped contours from forgings, as well as integral ribbed sheets.

Duplicating — Another giant is the huge Keller duplicating machine, used primarily to manufacture steel or Kirksite metal dies,

Turn Page

What's New in New Jersey



OF GREAT INTEREST to industrialists is the news that plans for the interconnection of the New Jersey Turnpike with the Pennsylvania Turnpike are being developed rapidly.

The proposed route of this interconnection is from the outskirts of Florence, N. J. to Edgely, Pa., using a new Delaware River crossing and connecting with a to-be-built extension of the Pennsylvania Turnpike from King of Prussia to Edgely.

Already the New Jersey Turnpike has proved of immense value to manufacturers, even though it has been open for less than a year. The interconnection with the Pennsylvania throughway will enable shippers to use these non-stop facilities from New York to the West.

Here in New Jersey — at the Crossroads of the East is a magnificent system of more than 1700 miles of paved state highways and some 6000 miles of hardsurfaced county roads.

> Write Box A, Public Service Electric and Gas Company, 70 Park Place, Newark, N. J. for your copy of the brochure, "An Industrialist's View of the Crossroads of the East."



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NEW YORK 17, N. Y.

A CHILTON (PUBLICATION



In its 28 illustrated pages you'll find the answers to many questions that affect the success of your electroplating on steel. You'll want to read more about:

- Which costs more: good electrocleaning or poor electrocleaning? See page 4.
- ¶ How can cleaning costs be reduced 33% while plating quality is being improved? See pages 7 and 8.
- What are four easy ways to improve the average rinse tank? See page 10.
- What rinsing fault is "an invitation to trouble" in the plating of high-carbon steel? See page 11.
- Why is it better to clean steel with reverse current than with direct current?

 See pages 12 to 14.
- What causes hydrogen embrittlement during electrocleaning? What is the remedy? See pages 15 and 16.
- ¶ One part chromic acid in 1,000,000 parts of cleaning solution—does that spell D-A-N-G-E-R? See page 16.
- ¶ How can an ordinary electrocleaning cycle betransformed into an exceptionally good cycle? See Cycle E on page 23.

FREE For a copy of "Four good steps toward better electroplating on steel", write to Oakite Products Inc., 30H Rector St., New York 6, N. Y.



-Technical Briefs-

The Keller saves long hours of grinding time on castings by producing an exact replica from a stylus-traced model.

Drawing operations are handled by the multi-purpose 8000-ton Birdsboro press, largest tripleaction hydraulic draw press in the world. Bed of the press is 31 ft. long by 10 ft. wide. Weight of the Birdsboro is 2,373,000 lb.

Stretch-Wrap—Heavy skins, armor plate for jet planes, stringers, large contoured skin panels and extrusions are handled with ease on a 200-ton Hufford stretch-wrap forming press. Sheet stock up to 24 ft. long by 6 ft. wide can be handled.

Difficult impact forming of highstrength aluminum alloys and sheets of stainless steel is done on the 20-ton Chambersburg Ceco drop hammer stamp press. The ram of this giant will lift a 20-ton die.

DRILLING, BORING:

Semi-automatic machine developed for jet compressor housings.

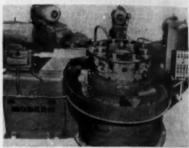
A new semi-automatic drilling, boring and facing machine has been developed to meet the specialized production needs for aircraft jet engine compressor housings.

The machine developed by Modern Industrial Engineering Co., Detroit, has four motor-operated heads located at 45° positions around the index table to perform the various drilling and boring operations.

Motors — Five-horsepower motors power the first and second heads while 3-hp motors drive the third and fourth heads. Manual indexing has been provided to permit inspection of both the tools and the part between successive precision machining operations. This avoids possible scrapping of valuable precision parts due to worn or broken tools.

A compressor housing is located on the index table of the machine by an OD locating ring and a pin locator that fits in one of the flange holes in the housing. The part is held in position by hold-down bolts that are accessible by rotating the index table, which is supported by hardened steel balls.

Loading—In operation the index table must be in loading position with the index pin bottomed before the cycle of the machine can be started. Three air cylinders lock the index table down when the index pin is in position.

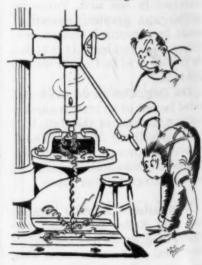


JET ENGINE compressor housings are rapidly drilled, bored, spotfaced in recently developed special machine.

When the cycle button is pushed, the first station is energized, causing the core drilling, spotfacing and countersinking operations to be performed. A light on the control panel shows when the station is operating correctly. The head on station one recedes automatically after feeding to depth.

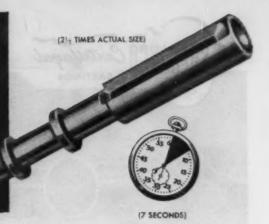
End of Stroke—At the end of its return stroke, the index pin is automatically disengaged and the air cylinder holddowns released, permitting the table to be manually indexed to the next 45° position.

Turn Page

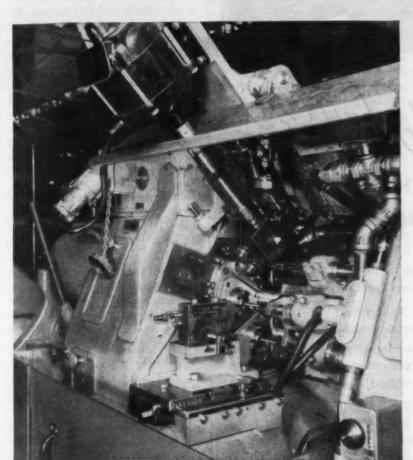


"Drilling for oil?"

This copper alloy part completely machined in 7 seconds—eliminating 3 secondary operations



ACME-GRIDLEY BAR AUTOMATIC PERFORMANCE PLUS



Blanking, slotting the radius and back drilling are included in the twelve operations done by the Acme-Gridley in 7 seconds. Any one of these, done as a second operation, would take an equal amount of time.

Think of the savings in handling time, in machining time, in man-hours. And remember, these second operations can not be handled in one set-up unless the machine provides the wide, open tooling zones required for independent-power-driven auxiliaries—a feature of Acme-Gridley design.

This is no stunt job—it is typical of the savings thousands of users are making through Acme-Gridley tooling ingenuity. May we show how it can cut your costs?

JOB FACTS

PART—Socket post, $17/16'' \log x .188''$ diam. MATERIAL—Copper Alloy

OPERATIONS—12, including slot radius, pick off and back drill, concentric with front drill

TIME-7 seconds, complete

MACHINE—Acme-Gridley RA-6 Spindle Bar Automatic

The NATIONAL ACME CO.

170 EAST 131st STREET . CLEVELAND 8, OHIO

ACME-GRIDLEY BAR and CHUCK-ING AUTOMATICS built in 1, 4, 6 and 8 spindle styles, maintain accuracy at the highest spindle speeds and fastest feeds modern cutting tools can withstand.



WITH SHENANGO
CENTRIFUGALLY CAST PARTS

HERE'S WHY... Shenango centrifugally cast parts offer many inherent advantages that can help you avoid trouble and save time and money.

For example, due to the centrifugal casting action, you get a more uniform, pressure-dense metal, free from sand inclusions, blow holes and other oftenhidden defects. You get higher strength, greater wear resistance, better elongation—longer lasting

parts, better able to withstand severe service of any kind.

So if your plans call for symmetrical shapes, anywhere from tiny bushings to huge rolls, ferrous or non-ferrous, rough or finished, check with Shenango. Company after company finds it a good way to do a better job at lower cost.

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Centrifugal Castings Division
Dover, Ohio
Executive Offices: Pittsburgh, Pa.

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-Technical Briefs-

PROTECTING MOLY:

Chromium and glass extend metal life at high temperature.

Chromium and glass may offer the protection needed to pave the way for wider use of molybdenum in jet-engines.

Because of its high melting point, 4750°F, molybdenum offers possibilities for use in aircraft jet engines. If molybdenum is to be used at jet-engine temperatures, however, it must be protected from rapid oxidation.

Better Protection—The National Bureau of Standards has recently conducted a study of protective coatings for molybdenum composed of chromium and frit (glass). Results indicate such coatings greatly extend the useful life of molybdenum at high temperatures, giving better protection than either chromium or ceramic coatings alone.

Various chromium-frit coatings were bonded to molybdenum specimens, then subjected to oxidation tests under tension in the range 1500° to 1800°F and to flame tests in the range 2000° to 3000°F.

Long Life—At temperatures of 1500° to 1800°F the coated specimens lasted for 1000 to 3000 hr. At 2800°F, with no applied load, protection for as much as 7 hr was attained, enough to be valuable for some applications. The investigation was conducted by D. G. Moore and associates of the NBS enameled metals laboratory, under the sponsorship of the National Advisory Committee for Aeronautics.

Base Costs—In this new study, molybdenum specimens were first coated with one of several powdered chromium-bearing base coats, which in some cases also contained some frit (glass). After firing of the base coat, in either a hydrogen or an argon atmosphere, a ceramic seal-coat containing no chromium was applied to some of the specimens.

Test results indicate that the most durable coatings resulted from application of a glass-free chromium base coat, followed by a glass seal coat.

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Not All Military Steel Set-Asides Being Spoken For

First quarter civilian quotas set tentatively at 60 pct of third quarter . . . Industry expects more . . . There'll also be extensive carryovers . . . Ingot rate still going up.

Reports that first quarter 1953 steel quotas for civilian manufacturers will be only 60 pct of third quarter (1952) allotments should be taken with a grain of salt. National Production Authority itself cautions that this is a tentative quota, subject to upward revision if supplies become more plentiful. Most people in industry are sure this will be the case. Also, there will be extensive carryover of tonnage from fourth quarter.

If the automobile industry is any criterion of civilian manufacturing, there will be more steel, not less, in the first quarter of 1953. Detroit is planning a bumper crop of automobiles during that period.

Holding first quarter quotas to the 60 pct ratio would probably mean a doubling of defense requirements, in addition to filling carryover orders. This seems unlikely.

Not Taking All—Actually the amounts of steel which mills are ordered to set aside for military use are not being fully subscribed by military fabricators. Fact of the matter is that NPA deliberately directed producers to reserve liberal tonnages for military use just to be on the safe side. So it is no wonder set-asides at some mills are not being taken up to the limit. This is especially true of wire products and tinplate.

If this continues over a period of time—say for 2 months or more—NPA will be under pressure to revise the defense take in favor of long-suffering civilian consumers. Indications are that a good many manufacturers are banking on just that.

Turn on Heat—Knowing that some steel reserved for military use is not being spoken for, civilian consumers are applying all possible pressure to get some of this tonnage. This adds up to a market in which there is terrific demand for early delivery, but in which some easing is expected within a few months.

Present 30-day inventory limits are arousing criticism in some quarters. Many consumers have indicated it is not practical for them to try to work from such limited stocks. They insist that adherence to this regulation will prove as costly and inefficient as it is frustrating.

Sore Spot — Chances are inventory limits will be raised to the pre-strike level of 45 days before too long. It is believed that a good many consumers had more than 45-day inventories before the steel strike. NPA finds policing of this order difficult due to a shortage of personnel.

This week steel sales people report pressure from customers is about as strong as they have ever seen it. The scramble encompasses hot-rolled, and cold-finished bars, plates, sheets and pipe.

Detroit Boom—Auto producers and their suppliers, along with oil country consumers, account for much of the pressure. The car people are interested chiefly in deliveries during the next 60 days. Having set booming production rates for themselves, they are allowing cost consideration to go out the window. Only desperate measures are keeping auto pro-

duction at a respectably high rate.

Conversion is common although most auto companies hope to get out from under these heavy costs by the end of the year. Ingots are being shipped from as far as the East and West coasts.

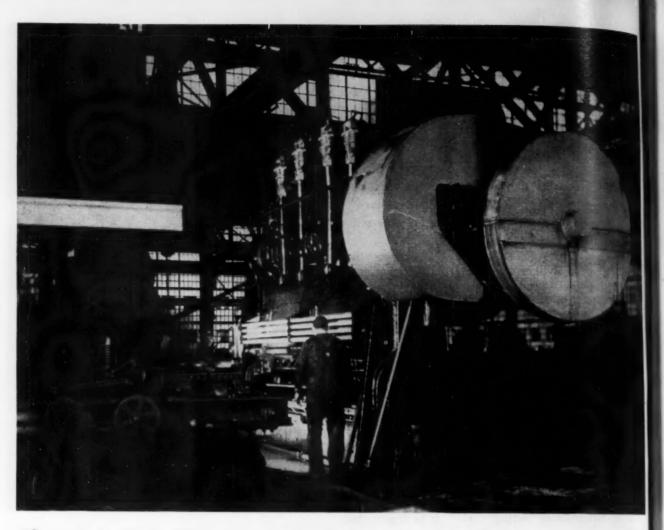
Rising Costs—Higher costs result from more than just the price of steel. Some steel is being purchased that will require expensive manufacturing steps to adapt it to production. A serious scarcity of wide sheets forced some auto tops to be made from narrower sheets, with strips added to make the necessary widths.

Auto makers are also buying bars and billets that do not exactly fit their specifications and require extra manufacturing.

Some Easing—In Washington last week improved supply of two steel items permitted some easing of controls. NPA removed restriction on the end-use of terneplate. And Office of International Trade boosted the export quota of secondary tinplate products during the third quarter from 30,000 tons to 65,000 tons.

Restrictions on other items will be relaxed as supply permits. First easing is expected in merchant products and lighter shapes. Auto demand should keep pressure on sheets for several months.

Ingot Rate Up — Steelmaking operations this week are scheduled at 102.0 pct of rated capacity, up half a pct from the previous week. If achieved, this will be another new high for production since the strike. It will not be a high for the year, since the industry averaged 102.2 pct of rated capacity during March before labor trouble pulled the rate down.



How to get structural steel with a punch

The literal way to do it is on a punch press. But figuratively speaking, it

takes much more than a punch press to put punch, or stamina, into structural steel. It takes quality control from blast furnace to end product...the kind you get from a team operation like Barium Steel Corporation.

That's the real punch behind this giant punch press at Barium's Phoenix Iron & Steel Company, which punches steel plate and structural steel. Phoenix Bridge Company, a subsidiary of Phoenix Iron & Steel, uses these products for constructing and engineering bridges, buildings, and other fabrications.

If these two companies can't solve your particular steel need, you'll probably find the answer elsewhere in the Barium family. Barium's fifteen member companies supply industry with steel in many forms, and are ready to work as a self-contained unit to speed urgently needed orders.

Address your steel problem to Barium Steel Corporation at 25 Broad Street, New York City.













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Market Briefs and Bulletins

Auto Metal Allocation—Enough copper and aluminum will be allocated by National Production Authority to permit output of 1.15 million passenger cars during first quarter of 1953. But production will be regulated by the steel supply. Present plan is to allocate on a basis of 60 pct of third quarter allotments which is enough for 630,000 units. Additional allowances may be given later if supply and demand become more balanced as production of steel increases. Extra grants of sheet and strip are almost a certainty. Big question mark is steel bars.

Controlled Cuts—Quantity of copper and copper-base alloy controlled materials products dropped from 659,500 tons in first quarter 1952 to 620,500 tons in the second, National Production Authority reports. Second-quarter deliveries consisted of about 336,000 tons of brass-mill products, 158,500 tons of wire mill and 125,500 tons of foundry and powder mill products. Figures contained in the new supplementary NPA report do not include imports.

Export Curbs Eased—Exports of tinplate secondary products during the third quarter have been increased from 30,000 short tons to 65,000 short tons by U. S. Office of International Trade. Improved supply situation paved the way for the relaxation, which affects such products as unassorted and mixed tempers, unmended menders, mill accumulations, waste waste, strips, circles, cobbles, and misprints. Allotment of 2500 tons out of the total has been earmarked for petroleum packaging.

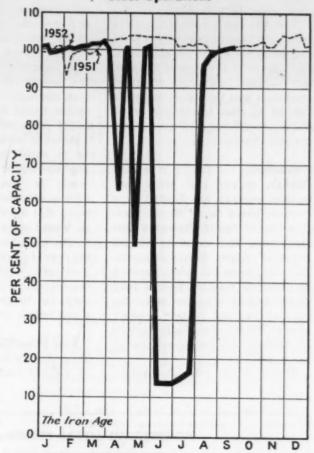
Inland Expands—First of four new openhearth furnaces planned by Inland Steel Co. was put into production at the company's Indiana Harbor Works, East Chicago, Ind. The four new 250-ton capacity openhearths will bring the number of steel-making furnaces at the Inland plant to 40. They are expected to increase the annual capacity of the plant from 3.75 million tons of steel ingots to 4.5 million tons.

Crane, Shovel Expansion—Expansion of power crane and shovel industry's output to 24,000 units annually by the end of next year has been recommended by Defense Production Administration. This is 9500 units more than capacity of Jan. 1, 1951. Of the increase, 6000 units were listed as ordnance-type cranes and wreckers. Balance is limited to power cranes and shovels other than ordnance type. Increased allotments of controlled materials to meet the higher output goal have not yet been scheduled.

Labor Surplus Contracts—In the last 8 days of fiscal 1952, the military services placed contracts amounting to more than \$293 million in areas reporting a labor surplus. This amount was 27 pct of the \$1.074 billion in contracts awarded by the military for labor surplus localities from Mar. 20 through June 30.

Terneplate Eased—Removal of government restrictions on end-use of terneplate by recent Amend. of National Production Authority order M-24 is expected to make available an ample-supply coated product as a possible substitute for other coated materials, including galvanized sheets. Status of terneplate as a controlled material is not affected by the amendment.

Steel Operations



District Operating Rates—Per Cent of Capacity

				-						-				
Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Sept. 7 Sept. 14	102.0 103.0	102.5 105.0	103.0 103.0	100.0 100.0	101.0 103.0	104.5 104.5	104.5 104.5	103.0 106.0	97.0 99.0	101.0 101.0	92.0 93.0	101.0 101.0	95.0 95.0	101.5 102.0

Beginning Jan. 1, 1952, operations are based on annual capacity of 109,587,670 net tons.

More Confusion Added In Copper

OPS allows Calumet & Hecla a 27.50¢ ceiling on Lake copper . . . Price calculations getting out of hand . . . Prime Western zinc at 14.50¢ . . . Set interim tin ceiling—By R. L. Hatschek

The copper market came in for another jolt of price confusion last week when Office of Price Stabilization granted an increase in ceiling price to one firm. Calumet & Hecla Consolidated Copper Co. was permitted a new ceiling of 27.50¢ per lb for Lake copper mined in Michigan's upper peninsula effective Sept. 8. The boost was allowed under provisions of the Capehart Amendment and was applied for in mid-February.

Now the ceiling price for electrolytic copper is 24.50¢ with Lake copper at its usual ½¢ premium. Then there is a series of ceilings for various different marginal producers and the whole set-up is capped by the foreign price of 36.00¢ to 36.50¢ delivered Connecticut Valley.

Confusion — Taking it a step farther, copper and brass mill product ceilings are figured by a formula based on an 80 pct pass-through of the higher-cost foreign metal and assuming 40 pct imported copper, 60 pct domestic. The more premium prices granted to domestic producers—and they aren't unjustified—the more inequities you get in mill product prices. Unless more fudge factors are thrown into the calculation of those ceilings.

Throw it all into one bottle,

shake it well and you come up with a thoroughly confusing, overly burdensome mess of prices. So argues one large segment of the copper industry. A solution is also offered: "Throw out the ceilings," they say, "and let the market find its own level."

Workable? — About the only way this would be 100 pct successful would be to eliminate 100 pct of present controls. Otherwise, end products' ceilings would have to be calculated on individual manufacturers' costs — an even more complicated procedure. Very few people are prepared to state with conviction that galloping inflation would die a natural death under present-day circumstances.

Another, simpler solution would be to raise the domestic ceiling for all copper producers. This would be almost as tough for OPS to swallow as the other solution. But it would be practical. It would even save taxpayers' money on subsidies going to marginal producers under government contracts. Copper is still short, though not critically so, and the output of these high-cost mines is a big help.

Zinc Price Up—The zinc market showed a rather unexpected sign of vitality last Friday when the price went up ½¢ to 14.50¢ per lb f.o.b. East St. Louis for Prime Western grade. Last month's statistics showed shipments a slight bit higher than production, preventing stocks from climbing over the 100,000-ton mark (See p. 102).

Domestic mine production of zinc dipped to 55,086 tons in July, 5 pct under the previous month's total. Output for the first 7 months of the year was 416,522 tons for an average of 59,503 tons monthly as compared to 56,592 tons per month for the entire year of 1951.

Open House—Aluminum Co. of America held the formal dedication ceremony for its new Wenatchee, Wash., reduction plant over the week end. The smelter will have a total capacity of 85,000 tons when it gets into full production early in 1953. First metal was actually poured in June and about one fourth of its capacity is in operation. The \$45 million cost is said to be the largest private investment made in the state at one time in one location.

Interim Tin Ceiling—OPS still has work to do on a firm ceiling on sale of imported tin.

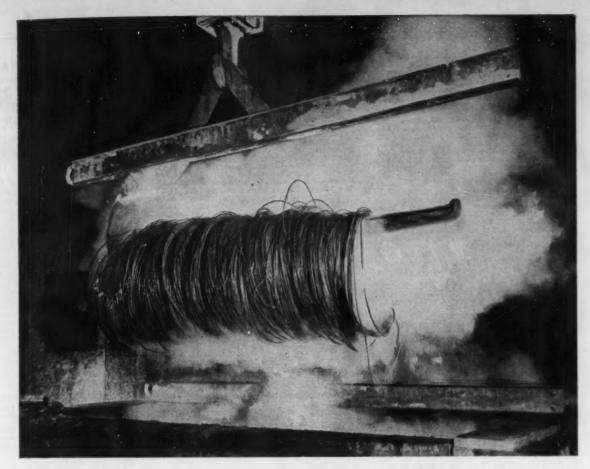
Action taken by OPS in establishing a ceiling equal to the Reconstruction Finance Corp. current offering price of \$1.21½¢ per lb, metal content, f.o.b. New York, was an interim move. Its effect was to exclude imported tin from requirements of Ceiling Price Reg. 31 (imports) and place it under General Ceiling Price Reg., so long as the reseller makes no sale at a higher than interim price.

May Apply—The reseller who wants to use a ceiling higher than the RFC offering price may institute one under CPR 31.

Tin resellers were made subject to CPR 31 on Aug. 21, following the government order permitting private importation of the metal.

NONFERROUS METAL PRICES

	Sept. 10	Sept. 11	Sept. 12	Sept. 13	Sept. 15	Sept. 16
Copper, electro, Conn	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21%	\$1.213/8	\$1.213/8		\$1.213/8	\$1.213/8*
Zinc, East St. Louis	14.00	14.00	14.50	14.50	14.50	14.50
Lead, St. Louis	15.80	15.80	15.80	15.80	15.80	15.80
Note: Quotations are going	prices.					
*Tentative						



Reconditioned after 7 years in use!

Monel pickling hook used at the Pittsburgh Steel Co., Pittsburgh, Pa. Fabricated by Youngstown Welding and Engineering Co., Youngstown, Ohio.

Monel pickling hooks after "minor surgery" and welding are ready for more years of service

Back in 1944, Pittsburgh Steel Co. installed Monel hairpin pickling hooks.

Monel® was selected after many tests with other materials that failed in less than a year.

Operating conditions were tough, pickling in 10% sulfuric acid at 180°, carrying a load of 3,000 pounds.

But Pittsburgh Steel felt that Monel could take it.

And they were right!

After seven years in use, the hooks showed signs of weakening only at the acid line.

And the fabricators, Youngstown Welding & Engineering Co., remedied that!

They cut out the corroded section and welded in new Monel.

Now, Youngstown feels that the hooks are al-

most as good as new and will give many more years of service.

This is a typical example of how fabricated Monel pickling equipment can give long service life—then be reconditioned with a small amount of material to give additionally long service.

Tough, corrosion-resistant Monel equipment can help you increase the efficiency of your own pickling room, too. Monel crates, racks, chains, hooks, and accessories are used by many of the nation's leading plants to give increased payloads and longer service life.

Right now, Monel is hard to get because so much is being diverted to defense production. But if you have a special metal failure problem, Inco's Technical Service Section will be glad to help you solve it. Write, giving full details.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street, New York 5, N.Y.



MONEL... for minimum maintenance

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MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.e.b, ship, pt. frt. allowed) (Base 30,000 tb, f.o.b. ship. pt. frt. allowed)
Flat Sheet: 0.188 in., 28, 38, 31.6¢; 48,
618-O, 38.6¢; 628, 35.8¢; 248-O, 248-OAL,
34.5¢; 758-O, 758-OAL, 41.9¢; 0.081 in., 28,
38, 32.8¢; 48, 618-O, 36.2¢; 528, 37.4¢; 248-O,
248-OAL, 35.8¢; 758-O, 758-OAL, 43.9¢; 0.032
in., 25, 38, 34.5¢; 48, 618-O, 39.0¢; 528, 41.8¢;
248-O, 248-OAL, 43.8¢; 758-O, 758-OAL,

in., 2S, 3S, 34.5¢; 4S, 618-O, 39.0¢; 52S, 41.8¢; 24S-O, 24S-OAL, 43.8¢; 75S-O, 75S-OAL, 64.8¢.

Plate ¼ in. and Heavier: 2S-F, 3S-F, 29.7¢; 4S-F, 31.7¢; 53S-F, 33.4¢; 61S-O, 32.3¢; 24S-O, 24S-OAL, 34.0¢; 75S-O, 75S-OAL, 40.7¢.

Extruded Solid Shapes: Shape factors 1 to 5, 35.5¢ to 77.2¢; 12 to 14, 36.2¢ to 93.5¢; 24 to 26, 38.7¢ to 31.22; 36 to 38, 45.9¢ to 81.79.

Red, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 39.4¢ to 35.2¢; cold-finished, 0.375 to 3 in., 2S-F, 38-F, 42.6¢ to 36.8¢.

Screw Machine Stock: Rounds, 11S-Ta, ½ to 11/3z in., 56.2¢ to 44.1¢; 19.1% to 1½ in., 43.6¢ to 41.0¢; 1.9/16 to 3 in., 40.4¢ to 37.8¢; 17S-Ta, 1.6¢ per lb lower. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 41.5¢ to 30.5¢; 52S, 50.4 to 36.8¢; 56S, 53.6¢ to 44.1¢; 17S-Ta, 56.7¢ to 39.4¢; 61S-Ta, 50.9¢ to 38.9¢.

Extruded Tubing: Rounds, 62S-T6, OD in in.; 1¼ to 2, 38.9¢ to 56.7¢; 2 to 4, 35.2¢ to 47.8¢; 4 to 8, 35.7¢ to 43.6¢; 8 to 9, 36.2¢ to 45.7¢.

Roofing Sheet: Flat, 0.019 in. x 28 in., 2er sheet, 72 in., \$1.199; 96 in., \$1.598; 120 in., \$1.997; 144 in., \$2.398. 0.24 in. x 28 in., 72 in., \$1.495; 144 in., \$2.398. 0.24 in. x 28 in., 72 in., \$1.495; 96 in., \$1.997; 144 in., \$2.398. 0.24 in. x 28 in., 72 in., \$1.495; 96 in., \$1.000; in. x 28 in., 26.6¢ per lb: 0.024 in. x 28 in., 28 in., 26.6¢ per lb: 0.024 in. x 28 in., 28.9r lb.

Magnesium

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 63¢; 3/16 in., 65¢; ½ in., 67¢; B & S Gage 10, 68¢; 12, 72¢.

Specification grade higher. Base: 30,000 lb.

Extruded Round Red: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 57.5¢; 1½ to 1.749 in., 58¢; 2½ to 5 in., 48.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.55 lb, 3.6 in., 55.7¢; 1.8 to 2.59 lb, 19.5 in., 58.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,600 lb; ½ to 1.80 lb, 20,000 lb; 1.80 and heavier, 80,000 lb.

Extraded Reund Tubing: M. wall thickness, outside diam, in., 0.049 to 0.057; ¼ in. to 5/18, \$1.40; 5/16 to %, 31.26; ½ to %, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, % to %, 93¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 8 in., 20,000 lb; 3 in. and larger, 80,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

Nickel and Monel

(D	use pr	91	10	ø,	9	z.	. 9. 0	770366 /	
								Nickel	Monel
Sheets, cold	i-rolled	1			0			77	60 1/2
Strip, cold-	rolled							83	63 14
Rods and b	ars	9 (0	0		73	58 1/4
-Angles, hot	-rolled					٠	0	73	5817
Plates								75	59 14
Seamless to	abes .					٠	. 1	06	93 14
Shot and b	locks	0 1							53 1/4

Copper, Brass, Bronze (Freight prepaid on 200 lb)

	Sheet	Rods	Extruded
Copper		11041	45.12
Copper, h-r		41.37	
Copper, drawn.		42.62	
Low brass	42.34	42.03	
Yellow brass .	40.17	39.86	
Red brass	43.10	42.79	
Naval brass	44.72	38.78	40.04
Leaded brass .			38.02
Com'l bronze .	44.39	44.08	
Mang. bronze .	48.44	42.83	43.89
Phos. bronze .	64.72	64.97	
Muntz metal	42.69	38.25	39.50
Ni silver, 10 pct	51.96	54.18	

PRIMARY METALS

(Cents per lb, unless otherwise noted)
Aluminum ingot, 99+%, 10,000 lb,
freight allowed
Aluminum pig
Antimony, American, Laredo, Tex., 29.00
Berryllium copper, 3.75-4.25% Be \$1.56
Beryllium aluminum 6% Be, Dollars
per lb contained Be\$69.50
Bismuth, ton lots
Cadmium, del'd
Cobalt, 97-99% (per lb) \$2.40 to \$2.47 Copper, electro, Conn. Valley 24.56
Copper, electro, Conn. valley 24.00
Copper, Lake. delivered24.625
Gold, U. S. Treas., dollars per os\$35.00
Indium, 99.8%, dollars per troy oz. \$2.25
Iridium, dollars per troy oz \$200
Lead, St. Louis 15.80
Lead, New York 16.00
Magnesium, 99.8+%, f.o.b. Freeport,
Tex., 10,000 lb
Magnesium, sticks, 100 to 500 lb.
42.00 to 44.00
Mercury, dollars per 76-lb flask,
f.o.b. New York \$187 to \$189
f.o.b. New York
Nickel oxide sinter, at Copper
Creek, Ont., contained nickel 52.78 Palladium, dollars per troy oz \$24.00
Palladium, dollars per troy oz\$24.00
Platinum, dollars per troy oz \$90 to \$91
Silver, New York, cents per oz 83.21
Tin, New York\$1.21%
Titanium, sponge \$5.00
Zinc, East St. Louis 14.50
Zinc, New York 15.3
Zirconium copper, 50 pct \$6.20
Zircontum copper, so pet

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5	-5 in	EG	8																				
				*																			27.25
	120																						26.75
								0		0				0					0			0	26.25
80-10-	10 in	go	r																				
No.	305				0	0	0	0							0	0	0						
No.	315			9		,		0						۰					0	0			30.50
88-10-	2 ing	10																					
No.	210				٥	0	0	D	0	0			0	۰	,			0	0				41.50
No.	215									,				0							4		40.00
No.	245									0							w						34.50
Yellov	v ing	ot																					
No.	405								0		0	0				0	0	0		0			23.26
Mang																							
No.	421				4			a									0				0		30.50

Aluminum Ingot

(Cents per lb, 10,000 lb and over)	
95-5 aluminum-silicon alloys	
0.30 copper, max	20.6
0.60 copper, max	29.4
Piston alloys (No. 122 type)	20.5
No. 12 alum. (No. 2 grade)	19.5
108 alloy	20.6
195 alloy	20.1
13 alloy (0.60 copper max.)	29.8
ASX-679	20.1
Steel description aluminum noteh h	

	deoxidizing	-	ol	u	m	i	n	WIT	n,				bar
Grade Grade	1-95-97 14 9	6									0		18.80
Grade	3-90-92%												18.40 18.20

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb	lots)
Cast, oval, 15 in. or longer	37.84
Electrodeposited	33 %
Forged ball anodes	43
Cast, oval, 15 in. or longer	34%
Zinc, oval	26 1/2
Nickel, 99 pct plus	/-
Rolled, depolarized	76.00
Cadmium Silver 999 fine, rolled, 100 oz lots,	\$2.15
per troy oz, f.o.b. Bridgeport,	97 14
Coun.	9179

Cuamicais	
(Cents per lb, f.o.b. shipping point	sta)
Copper cyanide, 100 lb drum	61
Copper sulfate, 99.5 crystals, bbl	12.8
Nickel salts, single or double, 4-100 lb bags, frt. allowed	2014
Nickel chloride, 375 lb drum	273/
Silver cyanide, 100 oz lots, per oz Sodium cyanide, 96 pct domestic	67%
200 lb drums	19.2
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

	Brasi	iliM a	Scrap	
ehipmen 1e	per pou	nd, a	14 44 1	per lb fe
anopmen le	for mo	re tha	n 40,000	10; 04
				The same

Copper								4	Heavy 21%	ings
Yellow	bri	2.88		9					191/4	175
Red br									20 %	19%
Comm.									20 1/2	19%
Mang.	bro	nze)						181/4	174
Brass 1	rod	ene	is					9	18%	***

Custom Smelters' Scrap (Cents per pound, carload lots, delivered to refinery) No. 1 copper wire 19.11 No. 2 copper wire 17.15 Light copper 18.14 Refinery brass 17.25 Radiators 14.73 © Dry copper content.

	10	ng	0	ì	N	A	0	k	e	r	s			5	C	r	0	P	6				
(Conta	per	P	101		9										-	la	8	8,		d	le	ili	pered
No. 1	COPP	er	W	rii	re	,									0		9	0	0				19.21
No. 2	CODD	BF	TH	rio	re	1.					٠		0								6		17.71
Light																							
No. 1	comp	108	sit	k	n							٠						0		6			18.56
No. 1																							
Rolled																							
Brass																							
Radiai	ors																					0	14.7
					A																		
Mixed	old (08	st										0 1			0 1			1	B			- 14

			-3														
Mixed	old	CASL.				0				9	9	0	0	0	- 1		14
Mixed	ne	w clips				0				0				0	10) -	11
Mixed	tu	rnings,	d	r	y					0					- 1		334
Pots a	nd	pans .		0			0		0	0	0				1	114-	,
		Do						•									

	Dealers' Scrap	
(Dealers'	buying price, f.o.b. New in cents per pound)	York

Copper and brass	
No. 1 heavy copper and wire.	18%-19%
No. 2 heavy copper and wire.	17 -17%
Light copper	15 16-16
New type shell cuttings	15 1/2 16
Auto radiators (unsweated)	14 -14%
No. 1 composition	17%—18
No. 1 composition turnings	17 -174
Unlined red car boxes	1614-17
Cocks and faucets	15 -104
Mixed heavy yellow brass	11 /4-13
Old rolled brass	14 19 10
Brass pipe	15 14-16
New soft brass clippings	16 -164
Brass rod ends	10%-16
No. 1 brass rod turnings	10 -104

Alumin	11	1	m)					
Alum. pistons and stru	11		1	0	0	0	0	6	- 676
Aluminum crankcases								. 7	- 7%
2S aluminum clippings	•		0					10	-10%
Old sheet and utensils								7	- 14
Borings and turnings			0	8	0			6	
Misc. cast aluminum .						0	0	3	- 74
Dural clips (24S)		0			0	0		4	- 7 19
Zie									

Zinc routings 3 Old die cast scrap 4	% - 14
Nickel and Monei	
Pure nickel clippings 35	-36
Clean nickel turnings 35	
Nickel anodes	
Nickel rod ends	
Clean Monel turnings 20	-21

New sinc clippings 8

New Monel clippings	28 -29 20 -31 28 -29 13 -14 12 -13
Lead	
Soft scrap, lead	131/4-13
Battery plates (dry)	
Datteries and free	

manufactured more	
Magnesium Segregated solids	-16 -18
Catering -	
Miscellaneous	
Block tin100	110
Block tin	78
No. 1 pewter	40
No. 1 auto babbitt 55	
Mixed common babbitt 1272	-14
Solder joints	-20
Siphon tops	60
Small foundry type 19	-13
1614	10



Could there ever be any substitute for this?

Hear that splendid brazen blare that lifts the heart! See those sun-sparks flash from the bells of the instruments! Here comes the Brass Band, folks ... stand back and clear the line of march!

Yes, it's Brass that makes the band unbeatable. And that goes for more different types of products than you can name...aircraft, automobiles, appliances, hardware, jewelry, machinery, electronics, fashion merchandise (and what have you?)... there's an endless list of products in which there's no substitute for the job performed by Brass. Because Brass is not only the special preference of production people, for its easy machinability and wide adaptability. It's the buy-word of countless customers

who know its unmatched qualities of endurance, appearance, and resistance to corrosion.

What's more, Brass is not short. The only thing short is the sightedness of those who tried "substitutes." So stay on the Brass standard of quality. And let's hear from you, now, about anything you need in the way of Brass sheet, rod, and wire.

The Bristol Brass Corporation, makers of Brass since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

Bristol-Fashion means Brass at its Best

Iron and Steel Scrap Markets

Now It's Slipping, Now It's Not

Market running hot and cold . . . Bullishness is quick to replace easier market in some areas . . . Pittsburgh market turns strong . . . Other areas show healthy scrap movement.

The scrap market is running hot and cold. One week easiness is creeping into some grade and the next it's replaced by bullishness. In Pittsburgh the market turned bullish despite mountainous inventories in steel mill yards.

In Cleveland a large tonnage of openhearth scrap was bought at ceiling and the market gained power. In Cincinnati scrap channels were greased for healthy movement and in St. Louis brokers had to scratch around to fill an order for 15,000 tons of No. 2 heavy melting and No. 2 bundles. Needless to say the order was placed at ceiling prices.

In New York blast furnace grades which had slipped a notch pricewise rallied back to ceiling. Blast furnace grades in Detroit had almost submerged below ceiling but two large purchasers came to the rescue. Steelmaking grades in Detroit were strong.

A northern mill spiced up the openhearth and blast furnace market in Birmingham with a ceiling price order. Boston scrap trading is brisk,

Meanwhile in Chicago there was softening in demand for openhearth and electric grades. Weaker tendencies were also noted in steelmaking grades in Buffalo.

Pittsburgh — The market has assumed a bullish trend. Inventories generally are high, and some mills are content to regulate shipments to balance with consumption. Electric furnace mills are reaching for scrap and finding it necessary to increase spring-boards to get it. Industrial and railroad scrap reportedly are still slow in coming out.

Chicago—With openhearth and electric furnace grades still going at ceiling, there was nonetheless some softening in demand here. Dealers'

inventories were well up and industrial scrap collections were on the upturn. Some downgrading of electric furnace grades was reported, and there was some feeling that a downtrend in these grades might be expected this week. Cast grades were moving at below ceiling with considerable spread in the prices being offered. Springboards appeared to be off in all grades.

Philadelphia—The market in this district is sailing along with practically no change for the past few weeks. All grades of steelmaking and blast furnace scrap continue at ceilings, while some cast items and chemical borings coast along under their ceilings. Fairless Works is said to have accumulated about a 30-day supply and is still in the market. Mill inventories are generally high and dealers' stocks are on the low side.

New York—With a few more orders to back them up blast furnace grades firmed up at ceiling. Movement of openhearth grades of steel scrap was good—at ceilings. Cast held to last week's prices but the market here had a softer tone. Dealers are holding more cast than usual in the face of slow foundry buying. Despite massive scrap stockpiles of some mills the trade here feels the market will stay put pricewise for some time.

Detroit—A better feeling prevailed here this week as all grades held their own. Blast furnace grades were on the brink a week ago. None were moving and there was little prospect of action. However, a major buyer in the area entered the market at ceiling as did an outside mill. Demand for steelmaking grades continues strong.

Cleveland — A large consumer has stepped into the market to purchase a considerable tonnage of openhearth scrap at ceiling price. It was understood the bulk of the material carries no limitation on springboards. The market here continues strong. Thinking generally is that prices will hold

at ceiling for balance of the year. But you can get an argument both ways on this. Electric furnace scrap is scarce.

St. Louis—Brokers are finding it difficult to fill an order placed last week for 15,000 tons of No. 2 heavy melting steel and No. 2 bundles at the ceiling prices, with a springboard of \$2 a ton for delivery within the next 30 days, as receipts are slowing down. A factor in the slump in receipts is believed to be an aftermath of the steel strike, which held up needed repairs that would have produced the scrap. Cast iron grades are dull.

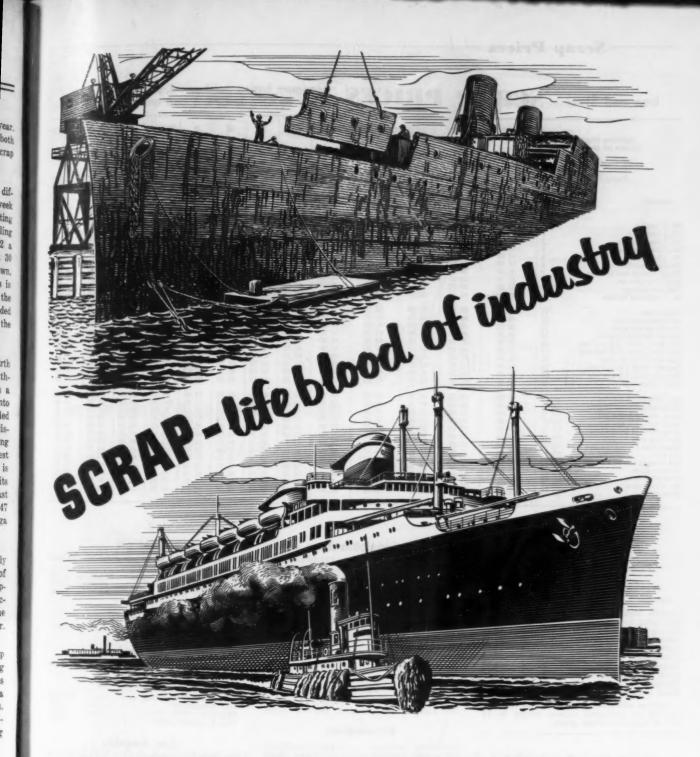
Birmingham — Sales of openhearth and blast furnace scrap in the Southeast took a jump this week when a large northern mill went back into the market with orders to be filled at ceiling prices anywhere in the district. This included a return to ceiling for blast furnace grades. The largest buyer in the district, however, still is out of the market. It recently cut its prices for blast furnace scrap. Cast scrap prices continued steady at \$47 in Birmingham, but one Chattanooga concern paid \$48.

Cincinnati—Scrap is moving freely in this area at ceiling prices. Talk of a weaker market has largely disappeared. It has been replaced by speculation whether the tone will continue strong much beyond end of the year.

Buffalo — Prices on cast scrap slipped \$2 to \$3 per ton under ceiling levels. Dealers reported cast piles building up as demand reflected a slackening in foundry operations. Easier tendencies also noted in steelmaking grades. Mills are restricting tonnage on new orders.

Boston—New England scrap trading is moving along briskly with the exception of cast grades. Though many dealers are selling blast furnace scrap at \$2 below the ceiling, some say they are doing business at the top level of \$24.17 for machine shop turnings and \$28.17 for short shovelings. Unstripped motor blocks are priced at \$31 per gross ton.

West Coast—Major activity in San Francisco scrap market was sudden resurgence of OPS men whose boss, Tighe Woods, was in town.



CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

BROTHERS AND COMPANY, INC.

MAIN OFFICE LINCOLN-LIBERTY BLDG. Philadelphia 7, Penna.

PLANTS

LEBANON, PENNA. DETROIT (ECORSE), READING, PENNA. MICHIGAN MODENA, PENNA. PITTSBURGH, PENNA.

ERIE, PENNA.

OFFICES

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CHICAGO, ILLINOIS LOS ANGELES, CAL. ST. LOUIS, MO.

CLEVELAND, OHIO NEW YORK, N. Y. SAN FRANCISCO, CAL.

SEATTLE, WASH.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

September 18, 1952

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Iron and Steel SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments.)

Switching Charge	222222			******		5	8	8	2.	842	n	.67	zizis:
(Dollars per grose ton)	Pittaburgh	ungstown inton subenville srren	eveland nfalo ncinnati	icage ayment naterville metaburg erestxville	arrows Pt hitlehem hitland, Ky okomo, ind	Louis	frelt	Duluth	insas City	rmingham abama City lanta	innequa.	natan	taburg, Cal rtland, Ore
GRADES OPS No.	249952	×2833	292₹	31000E	2552	36	ā	ă	3	455	2	Ī	2559
No. 1 bundles 1 No. 1 bundles 2 No. 1 heavy melting 2 No. 2 heavy melting 3 No. 2 heavy melting 4 No. 2 bundles 5 Machine shop turnings 6 Machine shop turnings 7 Shoveling turnings 8 Cast iron borings 10 No. 1 chemical borings 28	\$44.00 44.00 43.00 43.00 34.00 38.00 38.00 38.00 41.00	\$44.00 44.00 43.00 43.00 43.00 34.00 38.00 38.00 38.00 41.00	\$43.00 43.00 42.00 42.00 42.00 33.00 37.00 37.00 40.00	\$42.50 42.50 41.50 41.50 32.50 36.50 36.50 36.50 39.50	\$42.00 42.00 41.00 41.00 41.00 32.00 36.00 36.00 36.00 39.00	\$41.00 41.00 40.00 40.00 31.00 35.00 35.00 35.00 38.00	\$41.15 41.15 40.15 40.15 40.15 31.15 35.15 35.15 35.15 35.15	\$40.00 40.00 39.00 39.00 39.00 30.00 34.00 34.00 34.06 37.06	\$39.50 39.50 38.50 38.50 38.50 29.50 33.50 33.50 33.50 36.50	\$39.00 38.00 38.00 38.00 38.00 29.00 33.00 33.00 33.00 36.00	\$38.00 38.00 37.00 37.00 37.00 28.00 32.00 32.00 32.00 35.00	\$37.00 37.00 36.00 36.00 36.00 27.00 31.00 31.00 34.00	\$35,00 35,00 34,00 34,00 34,00 25,00 29,00 29,00 28,00 32,00
orge crops	51.50 49.00 46.50 46.00 47.00 49.00 50.00 44.00 43.00	51.50 49.00 46.50 46.00 47.00 49.00 50.00 44.00 45.00 43.00	50.50 48.00 45.50 45.00 46.00 48.00 49.00 43.00 45.00 42.00	50.00 47.50 45.00 44.50 45.56 47.50 48.50 42.50 44.50 41.50	49.50 47.00 44.50 44.00 45.00 47.00 48.00 42.00 44.00 41.00	48.50 46.00 43.50 43.00 44.00 46.00 47.00 41.00 43.00 40.00	48.65 46.15 43.65 43.15 44.15 46.15 47.15 41.15 43.15 40.15	47.50 45.00 42.50 42.00 43.00 45.00 46.00 40.00 42.00 39.00	47.00 44.50 42.00 41.50 42.50 44.50 45.50 39.56 41.60 38.56	46.80 44.00 41.50 41.00 42.00 44.00 45.00 39.00 41.00 38.00	45.50 43.00 40.80 40.00 41.00 43.00 44.00 38.00 40.00 37.00	44,50 42,00 39,58 39,00 40,00 42,00 43,00 37,00 38,00	41.00 38.00 37.00
No. 1 RR heavy meiting. RR 1 Scrap rails, random lengthe. RR 14 Scrap rails, 3 ft and less. RR 16 Scrap rails, 2 ft and less. RR 16 Scrap rails, 2 ft and less. RR 16 Rerolling rails. RR 15 Uncut tires. RR 20 Cut tires. RR 20 Cut tires. RR 20 Solid steel axies. RR 24 Solid steel axies. RR 24 Solid steel axies. RR 24 Solid steel axies. RR 27 No. 3 steel whoels. RR 27 Nossorted. RR 35	46.00 48.00 51.00 52.00 54.00 53.00 48.00 51.00 49.00 51.00 51.00	46.00 48.00 51.00 52.00 54.00 53.00 48.00 51.00 51.00 51.00 51.00	45.00 47.00 50.00 51.00 53.00 52.00 47.00 50.00 48.00 50.00 57.00 50.00	44.50 46.50 49.50 50.50 51.50 46.50 49.50 47.50 49.50 56.50 49.50 38.50	44.00 48.00 49.00 50.00 51.00 48.00 49.00 49.00 49.00 38.00	43.00 45.00 48.00 49.00 51.00 50.00 45.00 48.00 48.00 55.00 48.00 37.00	43.15 45.15 48.15 49.15 51.15 50.15 45.15 48.15 48.15 55.15 48.15 37.16	42.00 44.00 47.00 48.00 80.00 49.00 44.00 47.00 45.00 47.00 54.00 38.00	41.80 43.66 46.50 47.50 49.50 48.50 48.50 46.50 46.50 53.50 35.50	41.00 43.00 46.00 47.00 49.00 48.00 48.00 44.00 48.00 53.00 48.00 35.00	40.00 42.00 45.00 46.00 48.00 47.00 42.00 45.00 45.00 52.00 46.00 34.00	38.00 41.00 44.00 45.00 47.00 48.00 41.00 42.00 44.00 81.00 44.00 33.00	42.00 43.00 45.00 45.00 44.00 39.00 42.00 42.00 42.00 42.00

Cast Scrap Ceilings

Prices set by CPR 5, OPS

(F.o.b. all shipping points)

Grades	OPS No.					
Cupola cast	. 1 \$49.00					
Charging box cast						
Heavy breakable cast						
Cast iron brake shoes						
Stove plate						
Clean auto cast	. 7 52.00					
Unstripped motor blocks						
Cast iron carwheels	. 9 47.00					
Malleable						
Drop broken mach'y cast						

Ceiling price of clean cast iron foundry runout or prepared cupola drops is 75 pct of corresponding grade.

Under Ceiling Scrap Prices

Pittsburgh

Machine shop tur	n		\$32.00
Mixed bor, and me	s. turns.		32.00
Cast iron borings		\$35.00	to \$5.50
No. 1 machinery	cast		52.00
Heavy breakable	cast		45.00
Malleable			55.00

Chicago

Low phos. forge crops\$50.00	to	\$51.00
Low phos. 3 ft and under 44.00	to	45.00
No. 1 machinery cast 48.00	to	49.00
Cupola cast 45.00	to	46.00
Heavy breakable cast 41.00	to	42.00
Malleable 53.00	to	55.00
Stove plate 42.00	to	43.00
Clean auto cast 48.00		50.00
Charging box cast 44.00	to	45.00

Philadelphia Area

Clean cast chem. borings	\$36.50	to	\$37.00
Cupola cast	48.00	to	49.00
Unstripped motor blocks	41.00	to	42.00
Charging box cast	45.00	to	46.00

Cleveland

							_	_		-	-	_	-	_		
Cast	iron	t	10	r	i	n,	B	B						\$34.00	to	\$34.50
Stove																
Malle	able								9					54.00	to	55.00

Youngstown

Cast	iron	borings	\$35.00	to \$35.50

Buffalo

		machinery						
No.	1	cupola cas	 0	0	0	46.00	to	47.00

Birmingham

Shoveling turnings					. !	\$29.00	to	\$31.00
Cast iron borings						29.00	to	31.00
No. 1 cupola cast						46.00	to	47.00
Stove plate			0			41.00	to	42.00
Charging box cast						39.00	to	40.00
Heavy breakable						37.00	to	38.00
Drop broken machi	ne	bl	7	,		44.00	to	45.00
Unstripped motor b						37.00		

New York

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Boston

Brokers'	Buying	prices	per	gross	ton,	on cars
Machine						
Short al						
Mixed o	upola	cast .		. 39.	00 to	40.00
Heavy	breaka	ble ca	st .	. 39.	00 to	40.00
Stove p						39.00
Unstrip	ped mo	tor ble	nelen			31 00

Detroit

Brekers' Buying prices per gress ton, or	
No. 1 cupola cast\$43.00 to	48.00
Heavy breakable cast\$43.00 to	44.00
Stove plate 43.00 to	44.00
Cast fron brake shoes 39.00 to	40.00

Cincinnati

Drop	broken	cast	 .\$51.00	to \$52.00

\$38.00

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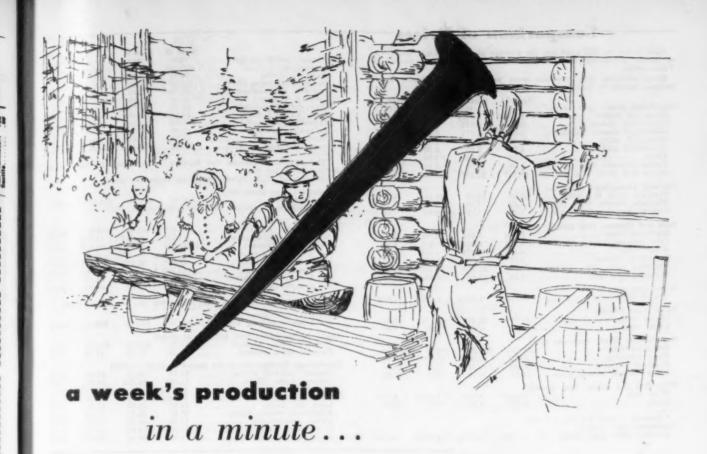
San Fran	ICISCO
No. 2 heavy melting	\$31.00
No. 2 bundles	29.00
Machine shop turn	17.00
No. 1 cupola cast	46.00

Los Angeles

No. 2 hea								\$31.00
No. 2 bur	dles		 					80.5
Machine	shop	turn				0		17.0
Shoveling	turr	ings						20.0
No. 1 cur	oola c	ast	 	0				50.0

Seattle

Hamilton, C	ont.	
No. 1 hvy. melting		\$35.50
No. 1 bundles		25.00
No. 2 bundles		22.50
Mechanical bundles		31.50
Mixed steel scrap		32.50
Mixed bor. and turn		35.50
Rails, remelting		44.80
Rails, rerolling		20.50
Bushelings		33.50
Bush, new fact, prep'd		12.50
Bush., new fact. unprep'd		22.50
Short steel turnings		13.50
Cast scrap		\$0.04



Until 1790, when Jacob Perkins, of Newburyport, Mass., invented a nail-cutting machine, a Colonial family worked more than a week to hammer out by hand a few hundred crude iron nails.

Today, a nail machine produces hundreds of steel nails in a minute. They're tough, accurate, economical, and provide an almost limitless variety of types and sizes—a total output of a million tons a year.

For America's nails and all other civilian and defense requirements, a continuing flow of scrap is of vital importance.

For the purchase or sale of iron or steel scrap...

phone or write "Your Chicago Broker"



231 S. La Salle St., Chicago

Telephone ANdover 3-3900

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in Italics.

sectines appear in francs.				
Flat-Rolled Steel: (per pound) Hot-rolled sheets Cold-rolled sheets Galvanized sheets (10 ga) Hot-rolled strip Cold-rolled strip Plate Plates wrought iron Stains C-R strip (No. 302)	Sept. 16 1952 8.775¢ 4.575 5.075 8.725 5.20 3.90 9.00 86.75†	Sept. 9 1952 8.775¢ 4.575 5.075 3.725 5.20 8.90 9.00 86.75†	Aug. 19* 1952 8.778¢ 4.575 5.075 8.725 5.20 8.90 9.00 86.78†	Sept. 18 1951 3.60¢ 4.35 4.80 3.50 4.75 3.70 7.85 36.75
Fin and Terneplate: (per base by Tinplate (1.50 lb.) cokes Tinplate, electro (0.50 lb.) Special coated mfg. ternes	0x) \$8.95 7.65 7.75	\$8.95 7.65 7.75	\$8.95 7.65 7.75	\$8.70 7.40 7.50
Bars and Shapes: (per pound) Merchant bars Cold finished bars Alloy bars Structural shapes Stainless bars (No. 302) Wrought iron bars	3.95¢ 4.925 4.675 3.85 31.50† 10.05	8,95¢ 4,925 4,675 3,85 31,50† 10,05	8.95¢ 4.925 4.675 8.85 31.50† 10.06	3.70¢ 4.55 4.30 3.65 31.50 9.50
Wire: (per pound) Bright wire	5.225∉	5.225∉	5.225€	4.85€
Rails: (per 100 lb) Heavy rails Light rails	\$3.775 4.25	\$8.775 4.25	\$3.775 4.25	\$3.60 4.00
Semifinished Steel: (per net tor Rerolling billets	\$59.00 59.00 70.50 76.00	\$59.00 59.00 70.50 76.00	\$59.00 59.00 70.50 76.00	\$56.00 56.00 66.00 70.00
Wire Rod and Skelp: (per pour Wire rods	nd)	4.325¢	4.325¢ 3,55	4.10¢ 8.85
* Revised † Add 4.7 pct. Composite: (per pound) Finished steel base price	4.376¢	4.376¢	4.376¢	4.181

Pig Iron: (per gross ton)	Sept. 16 1952	Sept. 9 1952	Aug. 19 1952	Sept, 10
Foundry, del'd Phila.		\$60.69	\$60.69*	1951 857,77
Foundry, Valley		55.00	55.00*	52,50
Foundry, Southern, Cin'ti	. 58.93	68.93	58.93*	55.58
Foundry, Birmingham		51.38	51.38*	48.88
Foundry, Chicago†		55.00	55.00*	52.50
Basic, del'd Philadelphia	. 59.77	59.77	59.77*	56.92
Basic, Valley furnace	. 54.50	54.50	54.50*	52.00
Malleable, Chicago†	. 55.00	55.00	55.00*	\$2.50
Malleable, Valley	. 55.00	55.00	55.00*	52.50
Charcoal, Chicago	. 78.34	78.34*	78.34*	70.56
Ferromanganese	. 226.25	226.25	226.25	186.25

†The switching charges for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy pages.

Composite:	(per gross ton)		1	
Pig Iron *Pig iron	price increase retroa	\$55.26 \$55.26 ctive to July 26,	\$55.26° 1952.	\$52.69

Scrap: (per gross ton) No. 1 steel, Pittsburgh No. 1 steel, Phila. area No. 1 steel, Chicago	41.50	\$43.00° 41.50° 41.50°	\$43.00° 41.50° 41.50°	\$44,00° 42,50° 42,50°
No. 1 bundles, Detroit	41.15* 46.50*	41.15° 46.50°	41.15° 46.50°	41.15*
No. 1 cast, Pittsburgh	49.00†	49.00†	49.000	46.60*
No. 1 cast, Philadelphia No. 1 cast, Chicago	48.50 45.50	48.50 45.50	46.00 45.50	49.00÷

*Basing pt., less broker's fee. †Shipping pt., less broker's fee.

manual but seen mental and				
Composite: (per gross ton) No. 1 heavy melting scrap	\$42.00	\$42.00	\$42.00	\$43.00
Coke, Connellsville: (per net ton Furnace coke, prompt		\$14.75	\$14.75	814.75
Foundry coke, prompt		17.75	17.76	17.75
Nonferrous Metals: (cents per por	und to laz	rge buyers)	
Copper, electro, Conn		24.50	24.50	24.50
Copper, Lake, Conn	24.625	24.625	24.625	24.62
Tin, Straits, New York	\$1.21%	\$1.21%	\$1.21%	\$1.03
Zinc, East St. Louis	14.50	14.00	14.00	17.50
Lead, St. Louis	15.80	15.80	15.80	16.88
Aluminum, virgin ingot	20.00	20.00	20.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	50.54
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex	89.00	39.00	89.00	42.04

Composite Price Notes

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Warehouse Price Notes

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: $(^{1})500$ to 1499 lb, $(^{2})1500$ to 3499 lb, $(^{3})6000$ lb or over.

WA	RE									Base	price, f.	o.b., dol	lara per l	00 h.
HOU			Sheets		Str	rip	Plates	Shapes	Ba	ra		Alley	Bars	
Cities	City Delivery Charge	Hat-Relled	Cold-Relied (15 gage)	Galvanized (10 gage)	Hot-Rolled	Celd-Rolled		Structural	Hot-Rolled	Cold- Finished	Het-Relied A 4615 As Relied	Hot-Rolled A 4140 Annealed	Celd-Drawn A 4615 As Relied	Cold-Drawn A 4140
Baltimore.	\$.26	5.81	7.17	8.42-	6.42		6.30-	6.47	6.41	7.18-				******
Birmingha	m15	5.80	6.65	8.57 7.70 ¹	5.80		6.47	5.95	5.80	7.43 8.25-				,,,,,,,,
Barten	298	6.48-	7.35-	8.59-	6.55	8,505	6.75	6.56-	6.38-	8.40 7.10-	10.78	11.15-		13.10
		6.52	7.52	8.74			6.80	6.75	6.61	7.54	*****	12.18		19.00
Buffalo	126	5.80	6.65	8.46	6.21		6.30	6.08	5.90	7.48		12.07	******	13.07
Chicago	20	5.81-	6.65-	8.05	5.83-		5.95-	5.95	5.83-	6.56-		10.65		12.6
		5.83	6.68		5.84		6.02	6.42	5.91	6.92		12.07		13.0
Cincinnati	15	6.13	6.72	8.52	6.21		6.47	0.42	6.13	7.16	******	-	******	1
Cleveland.	26	5.80-	6.65	8.16-	6.00-		6.12-		5.89	6.66-	******	10.79		12,7
Datasit	20	5.81 6.00-	6.81-	8.19	6.01	7.99	6.17	6.33	6.12-	6.99	10.72	11.02	12.72	13.6
Detroit	120	6.07	6.92	0.34	0.10	1.00	6.47	6.45	6.30	7.21				
Houston	720	6.74-	7.78-	8.68	6.61-	9.80	6.63-	6.66-	6.82-	9.60	11.90	11.90		13.9
Indianapol	isdel'd.	6.79	7.79		6.75		1.01	0.19	0.30				*****	
Kansas Ci	ty20	6.47	7.31	8.72	6.51		6.67	6.62	6.50	7.57				,
Los Angel	es20	6.58-			6.74-	9.15	6.66		6.57-	8.36-		12.05		14.6
Mamphia	10	6.60	8.49	10.55	6.78		6.71	6.64	6.62	0.04		*******		
						1								12.8
Milwauke	e i.20	5.97-	6.82-	8.22	6.01-	*****	6, 12	6.12	6.00	6.83-		10.82	*****	16.0
New Orle	ns15	6.28	7.12		6.32		6.43	6.43	6.31	7.85	******			
			2 97		6 79	9.53	6.60	6.39	6.59	7.53-	10.74	11.04	12.74	13.6
New York	30	6.35-	7.27-	8.312	7.15	9.55	7.18	6.70	6.79	8.05	10.14	11.00	10.11	
Norfolk	20	7.10			6.81		6.64	7.25	6.44	8.45				14.15
Philadelph	ia25	6.11-	7.13	8.35	6.60-		6.24	6.17-	6.42-	7.45	10.57	10.79		12.7
Lunwaeibi	IM.,,, .43	6.38	7.92	8.79	7.45	1	6.86	6.42	6.68	7.69	10.00	11.02		12.0
Pittsburgh	,20	5.80-	6.65	8.05-	5.94		6.12	5.95	5.83	6.66		10.65		16:1
Pertland.	20	7.60	9.00	9.70	7.60		7.05	7.30	7.35	9.46				1 4474
				1										
Sali Lake	City 20	*****		*****			****							
San Franc	isco15	6.87-	8.22	9.55-	6.80							12.05		. 14.
Seattle	20	6.90	8.46	10.05	7.08	9.70	7.19	6.90	7.40	9.31			, ,,,,,,	
		1		1					1	1	10.65	10.95	12.65	12.
St. Louis	.20	6.10	7.20	8.35	6.14		6.35		6.13	7.21	10.65	10.93	14.0	1
Sa Dani		6.47	7.31	8.71	6.50		6.61		6.49					

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Back in the days

when iron pipe was

virtually the only kind available, it was necessary

to specify this

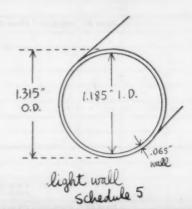
1°1.P.S.

1.315"
0.D.

1.049" 1.D.

heavy wall
schedule 40

But today with the high strength/weight ratio of stainless steel, the great majority of pipeline and process applications will have an ample margin of safety with this



Why pay for Schedule 40 pipe where Schedule 5 is more than adequate?

All sizes of Carpenter Schedule 5 pipe will easily handle 150 psi working pressures. Sizes under 1½" will safely handle considerably higher pressures.

By specifying this light wall stainless pipe you gain many advantages:

- You save money. Schedule 5 pipe costs about half as much per foot as Schedule 40.
- Schedule 5 has the same O.D. as Schedules 10, 40 and 80—for hook-up with existing lines as well as for new installations.
- 3. Its larger I.D. increases flow and capacity in pipelines, exchangers and other equipment.
- It's lighter. This means quicker and easier installation.

- You can save 10% to 25% on valves, fittings, weld rods, etc., because smaller O.D. material can frequently be used.
- Fittings are available from several manufacturers

 and stocks of Schedule 5 pipe are carried by conveniently located Carpenter distributors.
- Tubing sizes can now be replaced with light wall pipe . . . for ready hook-up with standard valves, pumps, etc.

Light wall Schedule 5 pipe saves dollars—and makes a lot of sense!

For complete data on Carpenter Schedule 5 Stainless Pipe, call your nearest Carpenter distributor or write us direct. We'll be glad to send you the information you need. THE CARPENTER STEEL COMPANY, Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N.Y. "CARSTEELCO"

Carpenter STEEL SCRAP



- guaranteed on every shipment

"	IRON AGE		Itaucs ros	dentify produce			1			T			104.		
-	STEEL	ING	отѕ	BILLE	SLABS		PIPE SKELP	PIL- ING	SHAI			STRI	P		
R.	PRICES	Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Sa Colla Alle	Hot- 18 & h
1	Bethlehem Pa.					\$76.00 B3			3.90 B3	5.80 B3					F
-	Buffalo, N. Y.			\$59.00 B3	\$70.50 B3,	\$76.00 B3,		4.675 B3	3.90 B3	5.80 B3	3.725 B3, R3	\$.16 B3	5.70 B3	7.90 85	3.77
	Claymout Del.		-		R3	R3	-				10			-	L
1	Castesville Pa.		-		-		-		-					-	1
1	Conshohecken Pa.				\$77.50 A2	\$83.00 /12					4.125 A2		5.90 A2		4.17
1	Harrisburg Pa.				-									-	-
1	Hartford Conn.														1
EAST	Johnstown Pa.			\$59.00 B3	\$70.50 B3	\$76.00 B3			3.90 B3	5.80 B3	3.725 B3				4
1	Newark N. J.														1
	New Haven Conn.											5.68 A5 5.85 D1			A
1	Phoenixville Pa.				-				6.10 P2					-	1
1	Putnam Cenn.													-	1
1	Sparrows Pt. Md.										3.725 B3	5.10 B3	5.70 B3	7.90 8)	3.7
1	Wercester Mass.														1
J	Trenton N. J.											6.45 R4			
	Alten, III.										4.20 L1			-	A
	Ashland, Ky.										3.725 A7				3.7
	Canton-Massillon, Ohio				\$70.50 R3	\$78.60 T5									
	Chicago, Sterling, III.			\$59.00 UI	\$70.50 U1, R3,W8	\$76.00 U1, R3,W8		4.675 UI	3.85 UI, W8	5.80 U/	3.725 AI,W8 4.725 N4				3
	Cleveland, Ohio				\$70.50 R3							\$.10 A5,J3		7.45 [1	3
	Detroit, Mich.	\$56.00 R5	\$57.00 R5		\$73.50 R5	\$79.00 R5					4.025 G3 4.40 M2	5.30 G3 5.45 M2 5.60 D1 6.05 D2	6.30 G3	8.15 G	3
15	Duluth, Minn.														
DLE WEST	Gary, Ind. Harbor, Indiana			\$59.00 U1	\$70.50 UI	\$76.00 UI, YI		4.675 13	3.85 /3, U/	5.80 /3, U/ 6.30 Y/	3.725 /3, UI, YI	5.35 /3	5.65 <i>I</i> 3, <i>UI</i> 6.15 <i>YI</i>		7
MIDDLE	Granite City, III.														
-	Kokemo, Ind.														
1	Middletown, Ohio											5.10 A7		200 81	
	Niles, Ohio Sharon, Pa.										4.225 SI	5.80 SI	5.65 SI	7.30.51	
	Pittsburgh, Pa.	\$54.00 UI	\$57.00 UI	\$59 00 UI, J3	\$70.50 UI,	\$76.00 UI	3.55 <i>UI</i> 3.65 <i>J</i> 3	4.675 UI	3.85 UI, J3	5.80 U1,J3	3.725 J3,A7 3.975 A3 4.225 S7	5.10 J3.A7 5.45 A3 5.80 B4.S7			
	Pertsmouth, Ohio												1	7.05 [67]	
1	Weirten, Wheeling, Fellansbee, W. Va.								4.10 W3		3.825 W3	5.10 W3	6.10 W3	7.95 W3	
	Youngstewn, Ohio					\$76.00 Y1, C10	3.55 U1, R3			6.30 Y/	3.725 UI, YI,R3	5.10 R3, Y1 5.70 C5 5.86 B4	5.65 R3, UI 6.15 YI	7.30 R3 7.80 Y1	
-	Fontana, Cal.	\$81.00 K1	\$83.00 K1	\$78.00 K/	\$89.50 K1	\$95.00 K1			4.45 KI	6.40 K1	4.975 KI	6.75 KI	6.55 KI		A
1	Geneva, Utah				\$70.50 C7				3.85 C7	5.80 C7					4
1	Kansas City, Mo.								4.45 S2		4.325 52				4
WEST	Los Angeles, Terrance, Cal.				\$89.50 B2	\$96.00 B2			4.45 C7, B2	6.35 <i>B2</i>	4.475 C7,B2		6.40 B2		ı
	Minnequa, Colo.								4.30 C6		4.775 C6		- m 99	-	л
	San Francisco, Niles, Pittsburg, Cal.				\$89.50 B2				4.40 B2 4.56 P9	6.30 /82	4.475 C7,B2		6.40 B2		ı
_/	Seattle, Wash.				\$89.50 B2				4.50 B2	6.40 B2	4.725 B2		6.65 B1	-	40
ВО ОТН	Atlanta, Ga. Birmingham, Ala. Alabama City, Ala.		-	\$59.00 T2	\$70.50 T2				3.85 T2,R3	5.80 T2	4.275 A8 3.725 T2,R3				
0	AMBAMA CRY, AM.	-	\$65.00 S2		\$78.50 S2			-	4.25 S2	-	4.125 S2	-	-		

-	Pla			SHEET	rs				WIRE	77137	PLATET	BLACK	STEEL
				SHEET	13	1			ROD	TIN	PLATET	PLATE	PRICE
Hot-rolle 18 ga. & hvyr.	d Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	10 ga.	Hi Str. Low Allo H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb, base box	Hollowware Enameling 29 ga.	
				*									Bethlebem, Pa.
3.775 B3	4.575 B3				5.675 B3	6.925 B3		11111					Buffalo, N. Y.
										† Special	coated mfg		Clayment, Del.
	1									1.25-lb cal	luct 95¢ from to base box		Castesville, Ps.
4.175 A2					5.925 A2					blackplate	-making quality 55 to 128 lb,		Canshahacken, Pa.
										coke base	20 from 1.25-lh box.		Harrisburg, Pa.
										add 25¢.	5: 1.50-lb,		Hartford, Conn.
									4.325 B3	25¢; 0.75-1	O: 0.50-lb add b, add 65e.		Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenizville, Pa.
							8						Putnam, Conn.
3.775 B3	4.575 B3	5.075 B3			5.675 B3	6.925 B3	7.775 B3		4.425 B3	\$8.80 B3	\$7.50 B3		Sparrows Pt., Md.
									4.625 A5				Worcester, Mass.
									4.425 R4				Trenton, N. J.
									4.70 <i>L1</i>				Alton, III.
1.775 A7		5.075 A7	4.925 A7										Ashland, Ky.
		5.075 R3											Canton-Massillon, Ohio
L775 M 8					5.675 UI				4.325 A5,N4 R3				Chicago, Sterling, III.
1.775 R3,	4.575 R3, J3		4.925 R3		5.675 R3, J3	6.925 R3, J3			4.325 A5				Cleveland, Ohio
975 G3	4.775 G3				6.225 G3	7.475 G3							Detroit, Mich.
													Duluth, Mino.
.77 \$ 13. UI, YI	4.575 13, UI, YI	5.075 13, UI	4.925 UI	5.475 <i>UI</i>	5.675 <i>I3</i> , <i>UI</i> 6.175 <i>YI</i>	6.925 13, UI 7.425 YI			4.325 YI	\$8.70 UI, 13, YI	\$7.40 UI.		Gary, Ind. Harbor, Indiana
30 G2	5.275 G2	5.50 G2	5.625 G2					-	-		\$7.60 G2	6.30 G2	Granite City, III.
		5.475 C9											Kokome, Ind.
	4.575 A7		4.925 A7	5.475 A7					-				Middletown, Ohio
17\$ SI					5.675 SI						\$7.40 R3		Niles, Ohio Sharon, Pa.
775 UI. 13, A7 1925 A3	4.575 UI, J3, A7	5.075 UI	1.925 UI		5.67\$ UI,	6.925 UI, J3	7.625 UI		4.325 A5	\$8.70 UI.	\$7.40 UI, J3		Pittsburgh, Pa.
363 A)									4.525 P7	-	-		Pertamenth, Ohio
75 W3,	4.575 W3, W5	S.875 W3, W5		5.475 W3, W5	6.025 W3	7.275 W3				\$8.70 W3, W5	\$7.40 W3, W5		Weirton, Wheeling, Follansbee, W. Va.
TSUI, B, YI	4.575 R3, Y1	5.775 <i>R1</i>	4.925 Y/	6.05 E2	5.675 R3, U/ 6.175 Y/	6.925 R3 7.425 Y1		5.65 <i>E2</i> 5.825 <i>RI</i>	4.325 Y1	\$8.70 R3			Toungstown, Ohio
25 K1	5.525 K1				6.625 K1	7.875 K1			5.125 K1				ontana, Cal.
75 C7													Genera, Utah
													Cansas City, Mo.
75 C7		5.825 C7						5.575 C7	5.125 C7,B2			1	os Angeles, Terrance, Cal.
									4.575 C6				Ainnequa, Colo.
75 C7	5.525 C7	5.825 C7							4.975 C7	\$9.45 C7	\$8.15 C7	S	an Francisco, Niles, Pittsburg, Cal.
													eattle, Wash.
													tlanta, Ga.
75 T2,	4.575 72	5.075 TZ, R3			5.415 T2			4.925 R3	4.325 T2, R3	\$8.80 T2	\$7.50 72	II A	irmingham, Ala. labama City, Ala.
									4.725 S2				louston, Tex.

te	RON AGE		Hanes identity	producers listed	an key at end o	r table. Dase p	erices, r.o.b. mil	ii, in cents per ii	D ₁₀ uniess other	wise noted.	Latres apply.	
-	STEEL		_577.77	BAI	RS				PLA	TES		WIRE
•		Carbon Steel	Reinforc- ing	Cold Finished	Alloy Hot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Migr's. Bright
	Bethlehem, Pa.				4.675 B3	6.00 B3	5.925 B3					
	Buffalo, N. Y.	3.95 B3,R3	3.95 B3,R3	4.975 B5	4.675 B3, R3	6.00 B3,B5	5.925 B3	3.90 B3			5.95 B3	
	Clayment, Del.							4.35 C4		5.35 C4		
1	Coatesville, Pa.							4.35 L4		3.33 C1	5.75 L4	
1	Conshohocken, Pa.							4.35 A2	4.95 A2		6.20 A2	
1	Harrisburg, Pa.							6.50 C3	6.50 C3		0.20 //2	
	Hartford, Conn.			5.475 R3		6.45 R3						
EAST	Johnstown, Pa.	3.95 B3	3.95 B3	0.410	4.675 B3	4.0.10	5.925 B3	3.90 B3		5.25 B3	5.95 B3	5.225 B3
-	Newark, N. J.	3.37 0.	4.50 0.5	5.375 W10	4.0.0	6.35 W10					-	5.040 D.
	New Haven, Conn.			-		-						
	Phoenigville, Pa.											
	Putnam, Conn.			5.475 W10								
	Sparrows Point, Md.		3.95 B3					3.90 <i>B3</i>		5.25 B3	5.95 B3	5.325 B3
	Wercester, Mass.					6.35 A5						5.525 A5
	Trenten, N. J.											
	Alten, III.	4.50 L1										5.45L1
	Ashland, Ky.							3.90 A7				
	Canton-Massillen	3.95 R3		4.925 R2,R3	4.675 R3	5.99 T5						
	Chicago, Sterling, Ill.	3.95 U,W8,	3.95 R3 4.70 N4	4.925 A5,B5 W8,W10	4.72 T5 4.675 U1,W8 4.65 R3	6.00 R2,R3 6.00 B5,L2, R3,W8,W10		3.90 R3. UI, W8	4.95 UI	5.25 UI	5.95 U/	5.225 A N4,R3 5.325K2
	Cleveland, Ohio	4.55 N4 3.95 R3	3.95 R3	4.925 A5,C13		6.05 A5 6.00 C/3	5.925 R3	3.90 R3,J3	4.95 /3		5.95 R3, J3	5.475W 5.225 A C/3, R
	Detroit, Mich.	4.10 R5		5.075 R5,P8	4.825 R5	6.05 A5 6.15 R5,P8	6.675 G3	4.45 G3			6.90 G3	612,
	Detroit, mics.	4.30 G3		5.175 P3	5.025 G3	6.20 P3	6.61.5 G.	1.40 0.7			-	
WEST	Duluth, Minn.											5.225 A
	Gary Ind. Harbor, Indiana	3.95 <i>13, U1,</i> Y1	3.95 /3, UI, YI	4.925 L.2, M5,R3	4.675 13, UI, YI	6.00 L2,M5, R3,R5	5.925 <i>13, U1,</i> 6.425 <i>Y1</i>	YI	4.95 /3	5.25 UI	6.45 YI	5.325 M
MIDDLE	Granite City, III.							4.66 G2				
	Kokomo, Ind.											5.325 C
	Middletown, Ohio											
	Niles, Ohio Sharon, Pa.							4.15 SI		5.70 SI	5.95 SI	
	Pittsburgh, Pa.	3.95 UI, J3	3.95 U1, J3	4.925 A5, J3, W10, R3, C8	4.675 UI, J3	6.00 W10,C8 6.05 A5	5.925 UI, J3	3.90 UI,J3	4.95 UI, J3	5.25 UI, J3	5.95 UI, J3	5.225
-	Pertsmouth, Ohie											5.625
	Weirton, Wheeling, Fellansbee, W. Va.	4.10 W3						3.90 W5 4.20 W3				
	Youngstown, Ohio	3.95 UI, YI, R3	3.95 UI, YI, R3	4.925 Y/	4.675 UI,CIO, YI	6.00 CIO, YI	5.925 <i>UI</i> 6.425 <i>YI</i>	3.90 UI, YI, R3			5.95 R3 6.45 YI	5.225
	Fentana, Cal.	4.65 KI	4.65 K1		5.725 KI		6.975 KI	4.50 K1		6.20 K1	6.55 KI	
	Geneva, Utah							3.90 C7		1	5.95 C7	
	Kansas City, Me.	4.55 S2	4.55 .52		5.275 S2							5.825
WEST	Los Angeles, Terrance, Cal.	4.65 C7,B2	4.65 C7,B2	6.375 R3	5.725 B2		6.625 B2					6.175
-	Minnequa, Cele.	4.40 C6	4.75 C6					4.70 C6				5,475
	San Francisco, Nilos, Pittsburg, Cal.		4.65 C7,P9 4.70 B2				6.675 B2					6.175
	Seattle, Wash.	4.70 B2	4.70 B2				6.675 B2	4.80 B2			6.85 B2	5.475
	Atlanta, Ga.	4.50 //8	4.50 A8	-			79				CAS T2	5.479
SOUTH	Birmingham, Ala. Alabama City, Ala.	3.95 T2,R3 4.35 S2	3.95 T2,R3		5.075 S2		5.925 T2	3.90 T2 R3			5.95 T2	R3
-	Houston, Tex.	4.35 32	4.33 34		3.013 32			4.30 32				

THE IRON AGE, September 18, 1952

Ke

Al Acme
Al Alan
Allegi
A4 Ameri
A5 Ameri
A6 Angel
A7 Armon
A8 Atlani

81 Babco
82 Bethle
83 Bethle
84 Blair
85 Blian
61 Califo
62 Carpe
63 Contr
64 Claye
65 Colon
67 Colum
68 Colum
69 Contr
610 Copp
611 Cumb
613 Cuyal

01 Detro 01 Detro 01 Drive

El Easte

F1 Firth
F2 Fitzs
F3 Folla
G1 Globs
G2 Gran
G3 Great
H1 Hans
12 Inger
13 Inlan
14 Inter
11 Jack
12 Jesso
13 Jone
14 Josly

KI Kais K2 Keyr K3 Kopp LI Lack L2 La S L3 Lond L4 Luk M1 Mah M2 McL M3 Mer M6 Myr M6 Myr

NI Nate
N2 Nat
N3 Nile
N4 Nor
OI Oliv
PI Pag
P2 Pbc
P3 Pile
P5 Pit

THE

Key to Steel Producers

With Principal Offices

- Al Aeme Steel Co., Chicago
- 42 Alan Wood Steel Co., Conste obecken, Pa.
- A3 Alleghroy Ludium Steel Corp., Pittaburgh
- American Cladmetals Co., Carnegie, Pa.
- American Steel & Wire Div., Cleveland
- 46 Angell Nail & Chaplet Co., Cleveland
- Armeo Steel Corp., Middletown, O. AT Al Atlantic Strel Co., Atlanta, Ga.
- 81 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- Bethlehem Pacific Coast Steel Corp., San Francisco
- Bethlehem Steel Co., Bethlehem, Pa. 83
- 84 Blair Strip Steel Co., New Castle, Pa.
- 85 Bliss & Laughlin Inc., Harvey, Ill.
- C/ California Cold Rolled Steel Corp., Los Angeles
- C Carpenter Steel Co., Reading, Pa.
- C3 Central Iron & Steel Co., Harriaburg, Pa.
- Co Claymont Products Dept., Claymont, Del.
- C Cold Metal Products Co., Youngstown
- G Colorado Fuel & Iron Corp., Denver
- C7 Columbia-Geneva Steel Div., San Francisco
- Cl Columbia Steel & Shafting Co., Pittaburgh
- C Continental Steel Corp., Kokomo, Ind.
- CIO Copperweld Steel Co., Glassport, Pa.
- CII Crucible Steel Co. of America, New York
- C12 Cumberland Steel Co., Cumberland, Md.
- Cl3 Cuyahoga Steel & Wire Co., Cleveland
- DI Detroit Steel Corp., Detroit
- 02 Detroit Tube & Steel Div., Detroit
- 03 Driver Harris Co., Harrison, N. J.
- El Eastern Stainless Steel Corp., Baltimore
- & Empire Steel Co., Manufield, O.
- FI Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
- F1 Fitzsiromons Steel Corp., Youngstown
- Fi Foliansbee Steel Corp., Foliansbee, W. Va.
- 61 Globe Iron Co., Jackson, U.
- G Granite City Steel Co., Granite City, Itl.
- G Great Lakes Steel Corp., Detroit
- III Hanna Furnace Corp., Detroit
- 12 Ingersoll Steel Div., Chicag
- 13 Inland Steel Co., Chicago

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52

- 14 Interlake Iron Corp., Cleveland
- // Jackson Iron & Steel Co., Jackson. O.
- Jessop Steel Corp., Washington, Pa.
- Jones & Laughlin Steet Corp., Pittsburgh J4 Joslyn Mig. & Supply Co., Chicago
- KI Kaiser Steel Corp., Fontana, Cal.
- K? Keystone Steel & Wire Co., Peoris
- K3 Kappers Co., Granite City, Ill.
- LI Laclede Steel Co., St. Louis Li La Salle Steel Co., Chicago
- L3 Lone Star Steel Co., Dallas 14 Lukens Steel Co., Coatesville, Pa.
- HI Mahoning Valley Steel Co., Niles, O. M7 McLouth Steel Corp., Detroit
- MI Mercer Tube & Mfg. Co., Sharon Pa-
- Mid-States Steel & Wire Co., Crawfordsville, Ind.
- M5 Monarch Steel Co., Inc., Hammond, Ind.
- Mi Mystic Iron Works, Everett, Mass.
- NI National Supply Co., Pittsburgh
- NI National Tube Co., Pittsburgh NJ Niles Rolling Mills Co., Niles, O.
- N4 Northwestern Steel & Wire Co., Sterling, Ill.
- 81 Oliver Iron & Steel Co., Pittaburgh
- Pl Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
- Pi Pilgries Drawn Steel Div., Plymouth, Mich. P4 Pittsburgh Coke & Chemical Co., Pittsburgh
- Pi Pittsburgh Screw & Boit Co., Pittsburgh

- P6 Pittshurgh Steel Co., Pittsburgh
- P7 Portsmouth Div., Detroit Steel Corp., Detroit P8 Plymouth Steel Co., Detroit
- P9 Pacific States Steel Co., Niles, Cal.
- RI Reeves Steel & Mig. Co., Dover, O.
- R2 Reliance Div. Eaton Mfg. Co., Massillon, O.
- RJ Republic Steel Corp., Cleveland
- R4 Roebling Sons Co. (John A.), Trenton, N. J.
- 85 Rotary Electric Steel Co., Detroit
- SJ Sharon Steel Corp., Sharon, Pa.
- S7 Sheffield Steel Corp., Kansas City
- 53 Shenango Furnace Co., Pittsburgh 54 Simonds Saw & Steel Co., Fitchburg, Mass.
- S5 Sloss Sheffield Steel & Iron Co., Birmingham
- .56 Standard Forging Corp., Chicago
- Stanley Works, New Britain, Conn. 57 S8 Superior Drawn Steel Co., Monaca, Pa.
- 59 Superior Stee Corp., Carnegie, Pa. 510 Sweet's Steel Co., Williamsport, Pa
- S11 Seidelhuber Steel Rolling Mills, Seattle
- 71 Tonawanda Iron Div., N. Tonawanda, N. Y.
- 72 Tennessee Coal & Iron Div., Birmingha
- 73 Tennessee Products & Chem. Corp., Nashville
 74 Thomas Steel Co., Warren, O.
- 75 Timken Steel & Tube Div., Canton, O.
- 76 Tremont Nail Co., Wareham, Mass.
- Ul United States Steel Co., Pittsburgh
- U2 Universal-Cyclope Steel Corp., Bridgeville, Pa.
- W1 Wallingford Steel Co., Wallingford, Conn
- W2 Washington Steel Corp., Washington, Pa.
- W3 Weirton Steel Co., Weirton, W Va.
- W4 Wheatland Tube Co., Wheatland, Pa
- W5 Wheeling Steel Corp., Wheeling, W. Va.
- W6 Wickwire Spencer Steel Div., Buffalo W7 Wilson Steel & Wire Co., Chicago
- W8 Wisconsin Steel Co., S. Chicago, Ill.
- W9 Woodward Iron Co., Woodward, Ala.
- W10 Wyckoff Steel Co., Pittsburgh
- YI Youngstown Sheet & Tube Co., Youngstown

BOILER TUBES

\$ per 100 ft, carlead	Si	20	Seas	oless	Elec. Weld		
lots, cut 10 to 24 ft. F.o.b. Mill	OD- In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.	
Babcack & Wilcox	2	13	23.93	28.14	23.19	27.28	
	21/2	12	32 17				
	3	12	35.78				
	31/2	11	44.72				
	4	10	55.52	65.31	53, 83	63.32	
National Tube	2	13	22.81	27.94	22.23		
	23/2	12	31.28	38.31	30.51		
	3	12	35.87				
	31/2	11	42,56				
	4	10	54.02	66.16			
Pittsburgh Steel	2	13		28.58			
. meaning a second	23/4	12	32.16	39.19			
	3	12	36.87	44.93			
	31/4	11	43.76	53.32			
	4	10	55.54	67.68			

C-R SPRING STEEL

	CARBON CONTENT								
Cents Per Lb. F.o.b. Mill				0.81- 1.85					
Bridgeport, Conn. 57									
Carnegie, Pa. Sy		7.30		10.20	19 50				
Claveland A5 Detrait D1		7.50	8.25	10.20	.14.04				
New Castle, Pa. B4.				10.20					
New Haven, Conn. DI			8.20	10.00					
Sharon, Pa. Sl		7.65		10.20	12.5				
Trenten, N. J. R4		7.95		10.50					
Weirton, W. Va. W3.	5.80	7.65	8,25	10.20	12.5				
Worcester, Mass. A5		7.60	8,55	10.50	12.8				
Youngstown C5		7.65	8.25	10.20	12.5				

STAINLESS STEELS

Base		eanle.		II.	fab.	-ill	844	47	mel
Date	pricu,	Cantra	per	ım,	Law Inc.	OR FILE	A-6-6	Total	Ber

Product	301	382	383	384	316	321	347	410	416	430	
Ingets, rerelling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00	
Slabs, billets, rerelling	18.50	20.00	22.00	21.00	32,25	26.25	28.50	16.50	20.00	16.75	
Forg. discs. die blocks, rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50	
Billets, forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00	
Bars, wires, structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25	
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50	
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00	
Strip, bet-relled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00	
Strip. cald-relled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00	

STAINLESS STEEL PRODUCING POINTS—Sheets: Midland, Pa., CII; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2; (type 316 add 4.54) J2; Baltimore, E1; Middletowa, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, J4; Lockport, N. Y., R4.

Strip: Midland, Pa., CII; Cleveland, A5; Carnegie, Pa., S9; McKossport, Pa., FI; Reading, Pa., C2; Washington, Pa., W2; (type 316 add 4.5¢); W. Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, C3; Lockport, N. Y., S4; Sharon, Pa., SI (type 301 add 3/4); Butler, Pa., A7; Wallingford, Conn., W1.

Bars: Baltimore, A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa. J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3: Chicago, U1; Syracuse, N. Y C11; Watervliet, N. Y., A3; Waukegan, A5; Lockport, N. Y., S4; Canton, O., T5; Ft. Wayne, J4.

Wtre: Waukegan, A5: Massillon, O., R3: McKessport, Pa., FI; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7 Dunkirk, A3; Monessen, PI; Syracuse, CII; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11

Plates: Brackenridge, Pa., A3 (type 416 add 1/26); Butler, Pa., A7; Chicago, UI; Munhall, Pa., UI; Midland, Pa., CII; New Castle, Ind., I2; Lockport, N. Y., S4; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3.

Forged discs, die blocks. rings: Pittsburgh. CII; Syracuse, CII; Ferndale, Mich., A3; Washington, Pa., J2. Forging billets: Midland. Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, s'1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.

ALLEGHENY LUDLUM-Slightly higher on Type 301; slightly lower on others in 300 series.

WASHINGTON STEEL-Slightly lower on 300 series extent where noted.

PIPE AND TUBING

Base discounts f.o.b, mills. Base price about \$200 per net tes.

-1

BOLT

Nuts.

% in. 9/16 in. % in. inclu

Nuts.

1/4 in. 9/16 in % in. inclu

Nuts,

1/4 in. 9/16 in. inclu 1/4 in

Nuts,

% In. 9/16 i % in. incl 1% in

7/16 1 er ¼ in. ¼ in. incl

Stove

Packs Packs Bulk, *Di not le kind 5000 For l plies. *Z plated black

Rivet 14 in

Cap

Mac

% in she she All c

Lag, 6 Ploy

TH

							BUTT	WELD								SEAMLESS					
**	1/2	In.	3/4	ln.	11	1 la.		In.	11/4	In.	2	In.	21/2-	3 In.	2	ln.	21/2-	2½-3 In.		31/4-4 la.	
STANDARD T. & C. Sparrows Pt. B3. Toungstown R3. Fentans K1. Pittsburgh J3. Pittsburgh J2. Alten, Ill. L1. Sharea M3. Pittsburgh N1. Wheeling W5. Wheeling W5. Wheeling W5. Extra STRONG PLAIN ENDS	Blk. 30.5 32.5 21.0 32.5 32.5 32.5 32.5 32.5 32.5 32.5 32.5	Gal. 8.25 10.25 +1.25 10.25 10.25 9.25 10.25 10.25 10.25 10.25 10.25 10.25	Blk. 33.5 35.5 24.0 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35	Gal. 12.25 14.25 2.75 13.25 14.25 13.25 14.25 14.25 14.25 14.25 14.25	Blk. 35.5 38.9 26.5 38.0 38.0 38.0 38.0 38.0 38.0 38.0 38.0	Gal. 15.75 17.75 6.25 15.75 17.75 16.25 16.25 17.75 16.75 17.75 15.75 17.75	Blk. 36.5 39.4 27.0 36.5 38.5 38.5 38.5 38.5 38.5 38.5 38.5	Gal. 16.25 18.25 6.75 16.75 18.25 17.25 18.25 18.25 18.25 18.25 18.25	Blk. 37.0 39.0 27.5 39.0 39.0 39.0 39.0 39.0 39.0 39.0 39.0	Gal. 17.25 19.25 7.75 17.25 19.25 18.25 19.25 19.25 19.25 19.25 19.25 19.25	Blk. 37.5 39.5 28.0 39.5 39.5 39.5 39.5 39.5 39.5 39.5 39.5	Gal. 17.75 19.75 8.25 17.75 19.75 18.75 19.75 19.75 19.75 19.75 19.75	Blk. 38.0 40.0 28.5 40.0 40.0 39.0 40.0 40.0 40.0 40.0 40.0 40.0	Gal. 18.25 20.25 8.75 18.75 20.25 19.25 18.25 20.25 18.75 20.25 20.25 20.25 20.25	24.0 24.0 24.0 24.0 24.0	2.25 3.75	27.0 27.0 27.0 27.0 27.0	Gal. 5.75 6.75 6.75	29.0 29.0 29.0 29.0 29.0 29.0	Gal 7.7 8.7 8.7 8.7	
	30.25 32.25 20.75 32.25 32.25 32.25 32.25 32.25 32.25 32.25 31.25 32.25	9.5 11.5 10.0 11.5 8.5 10.5 11.5 11.5 11.5 11.5 10.0	34.25 36.25 24.75 36.25 36.25 36.25 36.25 36.25 36.25 36.25 36.25 36.25 36.25 36.25	13.5 15.5 14.0 15.5 12.5 14.5 15.5 14.0 15.5 14.5 14.5 15.5	36.25 38.25 38.25 38.25 38.25 38.25 38.25 38.25 38.25 37.75 37.25 38.25	17.0 19.0 16.0 19.0 16.0 17.5 19.0 16.0 19.0 17.5 19.0	36.75 38.75 38.75 38.75 38.75 38.75 38.75 38.75 38.75 38.75 38.75 38.75 38.75	17.5 19.5 17.0 19.5 16.5 18.0 19.5 17.0 19.5 17.0 19.5 18.5 19.5	37.25 39.25 27.75 39.25 39.25 39.25 39.25 39.25 39.25 39.25 39.25 39.25 39.25 39.25	18.5 20.5 17.5 20.5 17.5 18.5 20.5 17.5 20.5 17.5 20.5 17.5 20.5	37.75 39.75 28.25 39.75 39.75 39.75 39.75 39.75 39.75 39.75 39.75 39.75	19.8 21.0 18.0 21.0 18.0 19.0 21.0 21.0 18.0 21.0 21.0 21.0 21.0 21.0	38.25 40.25 28.75 40.25 40.25 37.25 40.25 40.25 40.25 40.25 40.25 40.25 40.25	19.5 21.5 19.0 21.5 18.5 19.5 21.5 21.5 19.9 22.5 20.5 21.5	23.75 23.75 23.75 23.75	45	27.75 27.75 27.75 27.75	6.5 8.5 8.5	31.25 31.25 31.25 31.25	12.	

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt., 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 3½ pts. higher discount. Buttweld jebbers' discount, 5 pt. St. Leuis zinc price new 14 5¢.

COKE	
Furnace, beehive (f.o.b. oven)	Net-Ton
Connelisville, Pa\$14.50	to \$15.00
Foundry, beehive (f.o.b. oven)	
Connellaville, Pa\$17.50	to \$18.00
Foundry, oven coke	
Buffale, del'd	\$26.58
Chicago, f.o.b.	23.00
Detroit, f.o.b.	
New England, dei'd	24.80
Seaboard, N. J., f.o.b.	
Philadelphia, f.o.b	
Swedeland, Pa., f.o.b.	
Painesville, Ohio, f.o.b.	
Erie, Pa., f.o.b.	
Claveland delta	
Cleveland, del'd	25.06
Cincinnati, del'd	
St. Paul, f.o.b.	
St. Louis	
Birmingham, dei'd	21.69
Neville Island	23.06

ELECTRICAL SHEETS

22 Ga. H-R cut length F.o.b. Mill Cents Per Lb	Armature	Elec.	Meter	Dyname	Transf. 72	Transf. 65	Transf. 58		
Beech Bottom W5.		7.85	9.10	9.90	10.45	11.00	11.70		
Brackenridge A3.									
Granite City G2		8.55	9.80						
Ind. Harbor /3	7.35	7.85	9.10						
Manafield E2									
Niles, O. N3	7.35	7.85							
Niles, O. N3 Vandergrift U1	7.35	7.85	9.10	9.90	10.45	11.00	11.70		
Warren, O. R3 Zanesville A7	7.35	7.85	9.10						
Zaneaville A7	7.35	7.85	9.10	9.90	10.45	11.00	11.7		

PIG IRON			Dellar	s per gress to	m, f.a.b., sub	ject to switchi	ng charges
Producing Point	Basic	Foundry	Maileable	Bessemer	Low Phos.	Bi. Furnace Silvery	Low Phos. Charceal
Bethlehem B3	56.50	57.00	57.50	58.00			
Birmingham R3	50.88	51.38			*****		
Birmingham W9	50.88	51.38					
Birmingham S5	50.88	51.38					
Buffalo R3	54.50	55,00	55, 50				
Buffale H1	54.50	55.00	55, 50	*****		66.75	
Buffale W6	54.50	55,00	55,50		1		444.54
Chicago 14	54.50	55,00	55,00	55, 50			
Cleveland A5	54.50	55.00	55,00	55, 50	59.50		*****
Cleveland R3	54.50	55.00	55.00				
Daingerfield, Tex. L3	50.50	51.00	51.00				
Duluth 14	54.50	55.00	55.00	55,50	****	*****	*****
	54.50	55.00	55.00	55.50	*****	*****	*****
	34.30	59.75	60.25			*****	00110
Everett, Mass. M6			00.23	*****			
Fontana KI	60.50	61.00	11111	*****	*****	*****	*****
Geneva, Utah C7	54.50	55.00	44111				
Granite City, Ill. K3	56.40	56.90	57.40				
Hubbard, Ohio Y1	54.50	55.00	55.00				
Ironton Utah C7	54.50						
Jackson, Ohio JI.GI						65,50	
Lyle, Tenn. T3							68,50
Minnequa C6	56.50	57.50	57.50			*****	*****
Menessen P6	56,50			1			
Neville Island P4	54.50	55.00	55,00	55,50	*****	*****	*****
Pittaburgh UI	54.50			55,50			00000
	54, 50	55.00	55.00	55,50			
	56.50	57.00	57,50		60.00		
	58.50	59.00	59.50	58.00	62,50	*****	****
Swedeland 42				60.00	*****	*****	*****
Telede /4	54.50	55.00	55.00	55.50	11111	*****	*****
Trey, N. Y. RJ	56,50	57.00	57.50	11111	62.50	****	
Toungstown YI	54.50	55.00	55.00	55.50	*****	*****	
N. Tonawanda, N. Y. Tl		55.00	55,50				

DIFFERENTIALS: Add 50¢ our ton for each 0.25 pct silicon over base, (1.75 to 2.25 pct, except lew phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ten for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ten for phospherus, content 0.70 pct and over. Silvery Iron: Add \$1.50 per net ten for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. \$1 per ten for 0.75 pct or more phospherus, manganese as above. Bessemer ferrosilicon prices are \$1 overcomparable silvery iron.

CAST IRON WATER PIPE

6 to 24-in., del'd Chicago \$105.30 to \$105.80 6 to 24-in., del'd N.Y... 108.50 to 108.50 6 to 24-in., Birmingham 9.50 to 96.00 6-in. and larger, f.o.b. cars. San Francisco, Los Angeles, for all rail shipments; rail and water shipments less\$128.00 to \$130.00 Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.

MERCHANT WIPE BROOMS

MERCHANT WIRE PRODUCTS

	Standard & Coated Na	Weven Wire Fence 9-151/2 gs.	Fenne Pests	Single Loop Bale Ties	Twisted Barbless Wir	Gal. Barbed Wire	Merch. Wire Ann'ld	Merek, Wire Gal.*
F.o.b. Mill	Cel	Col	Col	Col	Col	Col	¢/lb.	4/%
Alabama City R3 Aliquippa, Pa. J3 Atlanta A8 Barteoville K2	127	141				148	6.075	6,523
Atlanta A8. Barteoville K2 Barteoville K6. Cleveland A6. Cleveland A5. Crawfrdavl. M4. Denora, Pa. A5. Duluth A5. Fairfield, Ala. 77. Johnstn., Pa. B3. Joliet, Ill. A5. Kekome, Ind. C9.		1						
Cleveland A5 Crawfrdsvl. M4	130	140		134		149	6.175	6,55
Duluth A5 Fairfield Ala 72	127	133		132		142	6.075	6,225
Heusten S2 Johnstn., Pa. B3	135	147	148		149	156	6.475	6,925
Jeliet, Ill. A5 Kokomo, Ind. C9	127	133	142	132		142	6.875	6,225
Los Angeles B2 Kansas City S2	139			144		160	7.025 6.675	7.125
Menessen P6 Meline, III. R3	143	140	136					****
Pittsburg, Cal. C7 Portsmouth P7	146	156		156	162	162	7.025 6.47	7.125
Rankin, Pa. A5 So. Chicago R3	127	133	140	132		144	6.075	6.325
Minneque C6. Medices, III. R3 Pittsburg, Cal. C7. Pertsmeuth P7 Rankin, Pa. A5. Se. Chicage R3. S. San Fran. C6. Sparrows Pt. B3. Sterling, III. N4. Struthers, O. Y1.	129	138		134 132	151		6.075	6, 675 6, 45 6, 475
Terrance, Cal. C7 Worcester A5	147						7.025 6.375	6.525
Williamsport, Pa. 5/0 Cut Nails, carlon	1		7.0		100	11.0	(lees	20é to
jobbers), at Conshe	ns, i	ken, i	a.,	(A2), H	The	ling.	W. Va.

(WS), 37.30.

* Alabama City and So. Chicago don't include sinc exits
Struthers based on 15¢ sinc.
† Alabama City, So. Chicago, and Mimoequa, add 45¢
per 100 lb.

-Mineellaneous Prices-BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittaburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched-Sq.

Nuts, Hot Press	t Off		unched	-34.
20	Less Keg.	K.	Less Keg.	K.
% in. & smaller. 9/16 in. & % in.	15 12	28 1/2 25	15 61/2	28 36 31
in. to 1% in. inclusive	9	23 22	1	1616

Nuts, Hot Pressed—Hexagon

1.75

ia ia

5

Gal.

体

, 325

125

det

454

14 in. & smaller. 9/16 in. & % in.	26 16 1/2	37 29 1/2	6 1/4	34
inclusive inclusive	12 8 1/4	25 23	2 2	177

Nuts. Cold Punched—Hexagon

MRIS! Anim 1 miles			3	
% in. & smaller. 9/16 in. & % in.	26 23	37 35	22 173	30 1/2
in. to 1% in. inclusive	19 1/4	31 1/2	12 2	25 1734

Nuts. Semi-Finished—Hexagon

Nuts, Semi-Pinist				
	Re	H	y.	
14 in. & smaller.	35	45	28 14	29 14
9/16 in. & % in. % in. to 1 % in.	23	35	28 1/4 17 1/2	30 1/2
inclusive	24	36	15	28 1/4
1% in. & larger.	13	26	8 34	23
	Lig	tht		
7/16 in. & small-				
er	35	46		
% in. thus % in. % in. to 1% in.	28 1/2	39 1/4		
inclusive	9.6	9.7		

Stove Boits

			TOTOM TOTAL
Packaged,			
Packaged,			 3110
Bulk, plair	finish	100	 62*

Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

piles.
**Zinc, Parkerized, cadmium or nickel
plated finishes add 6¢ per lb net. For
black oil finish, add 2¢ per lb net.

Riv	rets	1								E	10	84	16	3	ø	0	r	100	lb	
14	tn.	A	larger	0	0	0														

Can and Sat Sanaura

Hexagon head cap screws, coarse or fine thread, ¼ in thru % in. x 6 in., SAE 1020, bright	ws	anh aug 361
nne thread, ¼ in thru % in. x 6 in., SAE 1020, bright	Pet Off List	
nne thread, ¼ in thru % in. x 6 in., SAE 1020, bright	screws, coarse or	Hexagon head
in., SAE 1020, bright	n thru % in. x 6	fine thread.
% in thru 1 in up to & including 6 in. 48 % in thru % in x 6 in & shorter high C double heat treat	ight 54	in., SAE 102
in thru % in x 6 in & shorter	to & Including 6 to 49	% in them 1 in
nigh C double heat treat 46	to of including o in. 40	W dm about 64
nigh C double heat treat 46	x 6 in. & shorter	w in thru %
	at treat 46	niku C donbi
% in. thru 1 in. up to & including 6 in. 41	o & including 6 in 41	% in, thru 1 in
Milled studs	o at meruding o m. er	Milled stude
Diet bereit	***************************************	Flat been !
with treat cap screws, listed sizes 16	VB. DRIEG SIZER 15	wine near carb
Fillister head cap, listed sizes 14	listed sizes 34	Fillister head
Set screws, sq head, cup point, 1 in.	Leun point 1 in	Set screws, sq
diam. and smaller x 6 in. & shorter 53	r w 6 in 6 shorter 59	diam and an

Machine and Carriage Bolts

	Pet O	f List
W f	Case	C.
1/2 in. & smaller x 6 in. & shorter 9/16 in. & % in. x 6 in. &	15	28 1/4
% in. & larger x 6 in A	181/2	30 1/2
snorter	1734	29 14
Lag. all diam. x 6 in	14	27 1/2
Lag. all diam longer then	23	35
	21	33
Plow bolts	34	



There is no way under the sun to do small, precision tapping with "production" speed, satisfactory tap life and acceptable accuracy, other than to use a tool designed for the specific purpose.

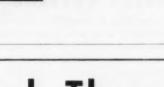
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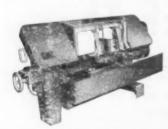
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THE EUCLID CRANE & HOIST COMPANY



No stooping, no fumbling... just swing saw cover open and everything is at your fingertip. Release blade tension, remove blade, insert new one and tighten. It's as simple as that! Result? Minimum loss of time, less chance of damage to blade and of injury to operator.



This is but one of many exclusive Kalamazoo features that add up to lowest cost intermittent or continuous cutting. It will pay you to specify Kalamazoo Metal Cutting Band Saws . . . three sizes, available with coolant system and casters.

MACHINE TOOL DIVISION

Kalamazoo TANK and SILO CO.

Remember . . .
there's a
Kalamagoo
Metal Cutting Saw
to fit your
exact needs



Model 610 cuts 6" round and 6" x 10" flat. Coolant equipment available.



Model 816 cuts 8" round and 8" x 16" flat. Model 824 cuts 8" round and 8" x 24" flat. Both models are available with coolant equipment.



Heavy-duty Model 1220 cuts 12" plus an rounds and 12" x 20" flat. Available with or without coolant equipment.

-Miscellaneous Prices-

RAILS, TRACK SUPPLIES

First 0 (exc No. 1

Silica Mt. Un Childs

Super Tex Silica

ern Silica Pa. Silica Ala Silica

cago Silica and

Chron

Standa

Magn

Standa

Grain

Dead

F.o.b.

51.50

Old ri Old ri Mesal Mesal High Aft will b

may Dec. Lake and

Per lots, Swed Ne Cana in Donn Fe Elect 99 Elect

TH

F.a.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts
Bessemer UI	3.775	4.25	4.925			1	
Chicago R3				6 65			
Ensley 72	3.775	4.25					1
Fairfield 72 Gary UI Ind. Harber 13		4.25		6.65		4.77	***
Gary Ul	3.775	4.25				4.77	
Ind. Harber 13	3.775		4.925	6.65		4.77	***
Johnstown DJ		4.40					***
Joliet ///	1	4. ZS	4.975				
Kansas City S2							100
Lackawanna BS.	13, 775	4. ZS	4.925			A 77	2
Lebenon B3				6.65			1
Lebenon B3 Minnequa C6	3.775	4.75	4.925	6.65		4.77	9.8
Pittsburgh R3							1
Pittsburgh 01							
Pittsburgh P5						1	
Pittsburgh /3				6.65		1	
Pitt'g., Cal. C7						4.92	\$
Seattle B2				7.15		4.92	5
Steelton B3	3.775		4.925			4.77	\$
Steelten B3 Struthers Y1				6.65		1	
Terrance C7						4,92	2
Youngstown R3				6.65			1

TOOL STEEL

F.o.b. mill Add 4.7 pct

w	Cr	v	Мо		Co	Base per li
18	4	1	-		-	\$1.500
18	4	1	-		5	\$2.13
18	4	2	-		-	\$1.63
1.5	4	1.5	8		-	81.00
6	4	2	6		-	96.50
High-	carbon c	chromiu	m			63.50
Oil ha	rdened	manga	nese			350
Specia	l carbon					32.6
Extra	carbon					27
Regula	ar carbo	n				23
War	rehouse	prices	on as	nd	east	of Mix
sissipp	sippi, 5.	.b¢ per	lb. h	igt	er.	West of

CLAD STEEL

Add 4.7 pct

Scausiess-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. L4	*29.5	
Washington, Pa. J2	°29.5	
Claymont, Del. C4	*28.00	
Conshohocken, Pa. A2		*27.50
Conshohocken, Pa. A2	*29,77	*26.20
Nickei-carbon		
10 pct Coatesville, Pa. L4	32,5	
I nconel-carbon		
10 pct Coatesville, Pa. L4	40.5	
Monel-carbon		
10 pct Coatesville, Pa. L	33.5	
10 pct Coatesville, Pa. L		
Pa. At		77.00
luminized steel sheets, hot dip, Butler, Pa.		
A7		7.7
* Includes annealing and pickling, or a	andblast	ting.

ELECTRODES

Diam.	Length	Cents
in in.	in in.	Per Ib.
	GRAPHITE	
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4 5	40	21.50
1	40	22.61
214	24. 30	23,15
2 72	24, 30	25.36
•	CARBON	
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

FLUORSPAR

Was	sh	ed	E	ra	V	e	1,		1	٠.	0	.1).		1	R	08	81	le	la	i	re,	III.
Price,	n	et	tor	1;		Ю	1	ľę	e	t	İ١	71	b	(31	r.		2	C	0	IJ.	fent	
70%	T	m	ore			0	0	0	0	0	0	0	0	۰	0								00.0

Miscellaneous Prices

REFRACTORIES

Fire Clay Brick Carloads, per 1000
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5)\$94.60
No. 1 Unio Pa Md. Ky., Mo., Ill. 88.00
Sec. duality. 279.20 No. 2 Ohio
Silica Brick
Mt. Uniou, Pa., Ensiey, Ala
Super Duty, Hays, Pa., Athens, Tex., Chicago
Silica cement, net ton, bulk, Ensley,
Silica cement, net ton, bulk, Chi- cago District
n.t.L
Standard chemically bonded Balt., Chester
Magnesite Brick
Standard, Baltimore\$104.00 Chemically bonded, Baltimore 93.00
Grain Magnesite St. %-in. grains
Domestic, f.o.b. Baltimore in bulk fines removed
In bulk 36.30 in sacks 41.80

LAKE SUPERIOR ORES

F.o.b. producing points in Pennsylvania, West Virginia and Ohioper net ton, bulk Midwest, add

Dead Burned Dolomite

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 26, 1952.
Gross Ton
Old range, bessemer \$9.45
Old range, nonbessemer 9.30
Mesabi, bessemer 9.20
Mesabi, nonbessemer 9.05
High phosphorus 9.05
men phosphorus 3.00
After adjustments for analysis, prices
will be increased or decreased as the case
may be for increases or decreases after
Dec. 2, 1950, in Lake vessel rates, upper
Lake rail freights, dock handling charges
and taxes thereon.

7.00

7.75

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2

METAL POWDERS
Per pound, f.o.b. shipping point, in ton
lots, for minus 100 mesh.
Swedish sponge iron c.i.f.
New York, ocean bags 10.9¢
Canadian sponge iron, del'd,
in East
Fe, carload lots 15.5¢ to 17.0¢
Electrolytic iron, annealed,
99.5+% Fe 44.0¢
Electrolytic iron, unannealed,
minus 325 mesh, 99+% Fe 60.0¢
Hydrogen reduced iron, mi-
nus 300 mesh, 98 + % Fe. 63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe. 82.0¢ to \$1.48
Aluminum 31.54
Aluminum
copper, reduced 10.00¢ plus metal value
copper, reduced 10.00¢ plus metal value Cadmium, 100-199 lb.96¢ plus metal value
Chromium, electrolytic, 99%
min., and quantity, del'd \$3.50
Lead 7.5¢ to 12.0¢ plus metal value Manganese 57.0¢
81licon
Silicon
Stainless steel, 302 83.00¢
Tin \$1.10
Tungaten aget (65 mesh) plus metal value
Stainless steel, 312
24.00 (0 30.00

Metalwash

equipment for washing, pickling, and drying for more than a quarter of a century

Metalwash

METALWASH ENGINEERING EXPERIENCE IS YOUR ASSURANCE OF LASTING PERFORMANCE

901 NORTH AVE. ELIZABETH 4, N. J.

REPRESENTATIVES IN PRINCIPAL CITIES.



Over 25,000 ORI DUST COLLECTORS Now IN

OPERATION

A TORIT DUST COLLECTOR ...



at Four to One Still Your Best Bet!

TORIT FB TYPE **Dust Separator**



Torit also manufac-tures a line of cyclone type dust separators. Sizes up to 5 H.P., with or without after-filters.

Here four grinding wheels are in constant use finishing small parts, yet this 1½ H.P. Model 81 Torit Dust Collector completely elimi-nates any abrasive dust hazard to operators or to finished parts.

The efficient, self-contained design of Torit Dust Collectors permits compact set ups like this. There is no work interference, piping is minimized, and operating costs are low because this Torit Dust Collector runs only when the wheels are in operation.

Solve your dust problems with Torit Dust Collectors. Models and sizes for standard and special dust-collecting problems. Ask for details and the latest Torit catalog.



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ENGRAVING The Green Engraver ENGRAVES. ROUTS. PROFILES and MODELS

A real money saver for industry. Proven by the experience of tool and die, electronic machine, radio, electrical and instrument manufacturers.

The Green Engraver zips out precision work on metal, plastics, wood, glass, hard rubber etc. . . . engraves panels, name plates, scales, dials, molds, lenses, instruments, instruction plates, directional signs . . . by simple tracing. Routing, profiling and three dimensional modeling indicate its versatility. Electric etching attachment available.

Specify the Green Engraver for the best in low cost performance. Special attachments and engineering service available for production work.

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STENCIL

NUMBERED RING

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365 PUTNAM AVENUE . CAMBRIDGE, MASS.

Ferroalloy Prices

Ferrochrome	
Contract prices, cer	ats per pound
tained Cr, lump size delivered. (65-72% Cr	bulk in carloads
0.00% C av.av	0.Z0% C 90
0.10% C 30.00 0.15% C 29.75	0.50% C
2.00% C	1.00% C 29.00
2.00% C	· · · · · · · · · · · · 23.00

65-69% Cr, 4-5% C 22-66% Cr, 4-6% C, 6-9% Si 22.66 S. M. Ferrochrome

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High-Nitrogen Ferrochrome
Low-carbon type: 67-72% Cr. 0.75% N
Add 5¢ per ib to regular low carbon ferrochrome price schedule. Add 5¢ for each
additional 0.25% N.

Chromium Metal Contract prices, per lb chromium contained, packed, delivered, ton lots 97% min. Cr. 1% max. Fe. 0.10% max. C \$1.10 0.50% max. C 1.10 5 to 11% C 1.08

Low Carbon Ferrochrome Silicon
(Cr 34-41%, Si 42-49%, C 0.05% max)
Contract price, carloads, f.o.b. Niagara
Falls, freight allowed; lump 4-in. x down,
bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained

Bulk 1-in. x down, 21.90¢ per ib contained Cr plus 12.60¢ per ib contained St Calcium-Silicon

Cont	ra	ct		r	T	10	Ce			p	0	r		31	b		0	f		8	ıl	k	0	Į,		dump
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Contract delivered.	price,	cents	per	lb	of alloy
Alloy 4: Si, 1.25-1.75	45-499	6 Cr.	4-6%	Mn	. 18-219
Alloy 5: 16.00% SI,	50.569	6 Cr.	4-6%	M	n, 18.50
Ton lots					20.7

Less ton lots 22.00

Co	ntra	et	E	ı	k	0	e.		c	e	n	ŧ	n	1	H	2		p	0	u	m	ić	1	0	t	al	lo:
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Ton	lots																									17	Ш
Loss	ton	10	t	s																						11	h, l

Graphidox No. 4

ASSESS COM TOCK
Ferromanganese
78-82% Mn, maximum contract base
price, gross ton, lump size.
F.o.b. Niagara Falls, Alloy, W. Va.
Ashtabus, O. \$225 F.o.b. Johnstown, Pa. \$225 F.o.b. Sheridan, Pa. \$225 F.o.b. Etna, Clairton, Pa. \$225
Pob Johnstown Ba 1227
W.o.b. Sonnstown, Pa.
F.O.D. Sheridan, Pa.
F.o.b. Etna, Clairton, Pa.
subtract \$2.80 for each 1% below 78%
Min
Briquets Cents per pound of briquet.
briquets Cents per pound of state
delivered, 66% contained Mn.
Carload, bulk
Ton lots, packed



22.00 22.60

4-69,

21.66 23.75 25.25 6 St

27.75

\$1.85

97%

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oy

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50

Joe, where can we get these small parts in the quantity we need?"

From Torrington, Tom! They turn out hundreds of thousands of precision metal parts a day."



Batteries of automatic and semiautomatic machines are working steadily and efficiently at Torrington, keeping many of the nation's leading manufacturers supplied with small precision metal parts made to their specifications. Whether you need a tremendous quantity of parts on a regular basis, or only an occasional few, we can furnish them at a surprisingly low

Just send us a sample or blueprint of your small metal components. Tell us how many you need. We'll give you a prompt quotation.



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Specialty Department 555 Field Street • Torrington, Conn.

Makers of TORRINGTON NEEDLE BEARINGS

Ferroalloy Prices-

Spiegeleisen

Contract prices gross ton; lump, f.o.b.

18-19% Mn
19-21% Mn
3% max. Si
almerton, Pa.
\$84.00
\$5.00
\$5.00 Palmerton, Pa. Pgh. or Chicago

Manganese Metal

Electrolytic Manganese

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

Carloads Ton Less 0.07% max. C, 0.06% 28.45 30.30 31.50 9.79% max. C 27.95 29.80 31.00 9.15% max. C 27.45 29.30 30.50 0.20% max. C 26.95 28.80 30.00 0.50% max. C 26.45 28.30 29.50 0.75% max. C 32.45 25.30 26.50% max. C 32.45 25.30 26.50

Medium Carbon Ferromanganese

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Sl, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk 11.40
Ton lots 13.05
Briquet, contract basis carlots, bulk delivered, per lb of briquet 12.65
Ton lots, packed 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash, \$95.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falis, N. Y., \$93.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.00 for each 0.50% Mn over 1%.

Silicon Metal

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si Driquets.
Carloads, bulk 6.95
Ton lots 8.55

Electric Ferrosilicon

Calcium Metal

Eastern sone contract prices, cents per pound of metal, delivered.

Cast Turnings Distilled Ton lots \$2.05 \$2.95 \$3.75 Less ton lots . . 2.40 3.30 4.55

Ferrovanadium



pointing problems?

Torrington Swaging Machines offer an ideal method of attaching ferrules and cable ends to wire or rod. Rapid hammer blows (4000 a minute) tighten the ferrule quickly around the rod - producing a bond that

withstands as much tensile strain as the inner member alone.



"The Torrington Swaging Machine" tells you how to do a better job of shaping many metal parts, and save money, too. It also describes the complete line of Torrington machines. Write for your free copy...today!

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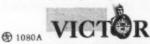
the easy way

Here's how to get efficient metal-cutting the easy way: Tell your supplier you want VICTOR hand and power hacksaw blades and flexibleback band saws, the brand most people buy.

Then ask him for a supply of VICTOR Metal-cutting Book-lets — full of timely authoritative information on the selection, use and care of any blades, full of handy hints on fast, efficient metal-cutting.

That's all there is to getting metal-cutting efficiency the easy way.

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SAW WORKS, INC. - MIDDLETOWN, N.Y., U.S.A. Makers of Hand and Power Hack Saw Blades, Frames and Metal Cutting Band Saw Blades

-Ferroalloy Prices-

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y. Carloads	
Rridge N V	
ANA ILLEG AT A	
Carloads	9.90
Ton lots	11.30
f.o.b. Langeloth, Pa., per pound	
contained Mo	\$1.15
Ferrocolumbium, 50-60% 2 in. x D, contract basis, delivered	
Ton lots	\$4.90
Ton lots	4.95
Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30 C. Contract	
basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus	
	49.75
Ferromolyhdenum, 55-75%, f.o.b.	\$3.75
Langeloth, Pa., per pound con-	
	\$1.32
26%, car lots, f.o.b. Siglo, Mt.	
Ferrophosphorus, electrolytic, 23- 26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$2 unitage, per gross ton	
10 tong to less carload	\$65.00
Ferrotitanium, 40%, regular	*10.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Ni- agra Falls, N. Y., and Bridge- ville, Pa., freight allowed, ton lots, per lb contained Ti	
ville. Pa., fraight allowed ton	
lots, per lb contained Ti	\$1.35
Ferrotitanium, 25%, low carbon,	
Falls, N. Y. and Bridgeville	
Pa., freight allowed, ton lots,	
per lb contained Ti	\$1.50
Ferrotitanium, 15 to 186, bigh	1.55
carbon, f.o.b. Niagara Falls.	
lots, per lb contained Ti Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti Less ton lots Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, car- load per net ton	1177.00
load per net ton Ferretungsten, standard, lump or 4 x down, packed, per pound contained W5, ton lots,	.111.00
or ¼ x down, packed, per	
pound contained W5, ton lots,	
1 Genvered	\$5.00
Melybdic oxide, briquets or cans, per 1b contained Mo, f.o.b. Langeloth, Pa. bags, f.o.b. Washington, Pa., Langeloth, Pa.	
Langeloth, Pa	\$1.14
bags, f.o.b. Washington, Pa.,	\$1.13
Simpal 20% St 20% Mn 2006	41.10
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per	
Ohio, freight allowed, per	
nound	14.50¢
Carload, bulk lump Ton lots, bulk lump Less ton lots, lump	15.75¢ 16.25¢
Less ton lots, lump	16.25∉
Vanadium Pentoxide, 86 - 89%	
V ₂ O ₅ contract basis, per pound contained V ₂ O ₅	
	\$1.28
Zirconium, 35-40%, contract ba-	\$1.28
Zirconium, 35-40%, contract ba-	\$1.28
Zirconium, 35-40%, contract ba-	\$1.28 21.00¢
Zirconium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots	
Zirconium, 35-40%, contract ba- sis f.o.b. plant, freight al- lowed, per pound of alloy. Ton lots	
Zircenium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots	
Zirconium, 35-40%, contract ba- sis f.o.b. plant, freight al- lowed, per pound of alloy. Ton lots	21.00¢
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk	21.00¢
Zircenium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircenium, 12-15%, contract basis, lump, delivered, per ib of alloy. Carload, bulk	21.00¢
Zircenium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircenium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosil, contract prices per lb of alloy, del fob Philo Oblo.	21.00¢
Zircenium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircenium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosil, contract prices per lb of alloy, del fob Philo Oblo.	21.00¢
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Boronii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.	21.00¢
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Boronii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.	21.00¢ 7.00¢ \$5.25
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boros Agents Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound.	21.00¢ 7.00¢ \$5.25
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boros Agents Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound.	21.00¢ 7.00¢ \$5.25
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Zirconium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Boronii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Sl, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Sl, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound	21.00¢ 7.00¢ \$5.25
Zirconium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosil, contract prices per lb of alloy del f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound	21.00¢ 7.00¢ \$5.25
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Zirconium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosil, contract prices per lb of alloy del f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 .85
Zirconium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosil, contract prices per lb of alloy del f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. C, 1 in. x D. Ton lots Fo.b. Wash., Pa.; 100 lb up 10 to 14% B 14 to 19% B 19% min. B	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 18.00¢ \$1.20
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Boronii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots Fo.b. Wash., Pa.; 100 lb up 10 to 14% B 14 to 19% B Grainai, f.o.b. Bridgeville, Pa	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Boronii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots Fo.b. Wash., Pa.; 100 lb up 10 to 14% B 14 to 19% B Grainai, f.o.b. Bridgeville, Pa	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boros Agents Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Sl, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Sl, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferreboron, 17.50% min. B, 1.50% max. C, 1 in. x D. Ton lots. Fo.b. Wash., Pa.; 100 lb up 10 to 14% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.00 68¢
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boros Agents Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Sl, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Sl, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferreboron, 17.50% min. B, 1.50% max. C, 1 in. x D. Ton lots. Fo.b. Wash., Pa.; 100 lb up 10 to 14% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.00 68¢
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound. Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots. F.o.b. Wash., Pa.: 100 lb up 10 to 14% B 14 to 19% B 19% min. B Grainai, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Mangarages, Hoyan, 75,00% Mp.	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.00 68¢
Zirconium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B. Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots F.o.b. Wash., Pa.; 180 lb up 10 to 14% B 14 to 19% B 14 to 19% B 19% min. B Grainai, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe. 1.50 y max. Si, 3.00% max. C, 2 in. x	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.00 68¢
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Boronii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound. Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots. Fo.b. Wash., Pa.; 100 lb up 10 to 14% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe. 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.00 68¢ 50¢
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Boronii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound. Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots. Fo.b. Wash., Pa.; 100 lb up 10 to 14% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe. 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.46
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots. F.o.b. Wash., Pa.; 100 lb up 10 to 14% B 14 to 19% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Mangauese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe. 1.50% max. Si, 3.00% max. C, 2 in. x D. del'd Ton lots Less ton lots	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.00 68¢ 50¢
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots. F.o.b. Wash., Pa.; 100 lb up 10 to 14% B 14 to 19% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Mangauese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe. 1.50% max. Si, 3.00% max. C, 2 in. x D. del'd Ton lots Less ton lots	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.46
Zircenium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircenium, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Boronii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound. Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferreboron, 17.50% min. B, 1.50% max. C, 1 in. x D. Ton lots. F.o.b. Wash., Pa.; 100 lb up 10 to 14% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. C, 2 in. x D. del'd Ton lots Less ton lots Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 2 in. x D. del'd Ton lots Less ton lots Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. Si, 0.50% max. Pe, balance	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.46
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Ton lots Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Boron Agents Borosii, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots. F.o.b. Wash., Pa.; 100 lb up 10 to 14% B 14 to 19% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Mangauese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe. 1.50% max. Si, 3.00% max. C, 2 in. x D. del'd Ton lots Less ton lots	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.46
Zircentum, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy. Zircentum, 12-15%, contract basis, lump, delivered, per lb of alloy. Carload, bulk Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohlo, freight allowed, B, 3-4%, Sl, 40-45%, per lb contained B Bortam, f.o.b. Niagara Falls Ton lots, per pound Less ton lots, per pound. Corbortam, Tl, 15-21%, B, 1-2%, Sl, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots, per pound Ferroboron, 17.50% min. B, 1.50% max. C, 1 in. x D. Ton lots. Fo.b. Wash., Pa; 100 lb up 10 to 14% B 19% min. B Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. No. 1 No. 6 No. 79 Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe. 1.509 max. Sl, 3.00% max. C, 2 in. x D, del'd Ton lots Less ton lots Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Sl, 0.60% max. Fe, balance Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Fe, balance Ni, delivered	21.00¢ 7.00¢ \$5.25 45¢ 50¢ 10.00¢ \$1.20 1.50 \$1.46 1.57

Stlens, contract basis, delivered.
Ton lots



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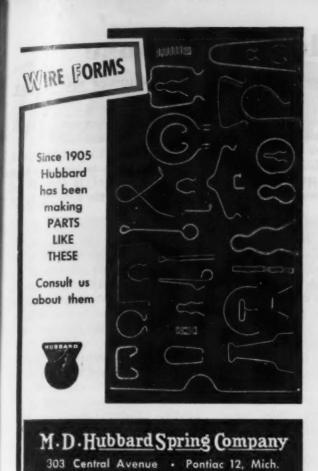
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LEVELER-ROLLER

Aetna-Standard Roller Leveler, Motor ven. 17 Rolls 4%" Dia. Driven

48" x 48" x 20' Cincinnati, Four Head 48" x 48" x 12' Niles-Bernent-Pond, Four Head 60" x 60" x 12' Niles-Bernent-Pond, Four Head 72" x 72" x 12' Niles-Bernent-Pond, Four Head

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Type "B" Crown Full Automatic, Nickel &
Chrome Plating Machine, Max. Work Size
16" wide x 36" deep x 4" thick.
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"x 10" Schmitz Single Stand Two High With Friction Drive Rewinder. 2½" x 16" Philadelphia Two High Cold Roll-ing Mill. Complete with Pinion Stand, 75 H.P. Motor 440/3/60. Starter and Controls, Incl.

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H.P. A.C. Motor.
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TESTING MACHINE

300,000 lb. SOUTHWARK-EMERY Universal Hydraulic Testing Machine.

TRIMMING LINE #1049 Torrington Trimming Line, With Feed Rolls and Scrop Cutter. Capacity for steel or aluminum alloys 1/5" max. Trimmed width 22" min. 66" max. Scrop Length 3/4" min. 21/4" max.

UNIVERSAL IRONWORKERS

Ryerson Steel Frame Universal Iron Worker,
M.D. Capacity Punch %" thru %", Shear 1"
Square 11/4" Round, 1/2" x 4" Flat, 4 x 4 x
1/4" Ang. es
No. 28U-30 Buffalo Armer Plate Universal Ironworker—Combination Punch, Shear & Bar
Cutter, Motor Driven Capacities—Shear 3"
Round, 21/6" Square, 5x1%" Flat, 5x5x1%"
Angles, 12"—311/2# Beams, etc., Punch 11/2"
thru 11/4".

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The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

No Sale - A rare bird in the Pittsburgh used machinery market is one who can work up enthusiasm over business conditions. General impression in the trade is that inquiries are plentiful, closing deals

The customer continues to be in the driver's seat. He is shopping around, taking his time before parting with any cash. An exception to this trend is the dealer or broker who can get hold of a crane. Once in possession of this tempting bait, all he has to do is to mention it discreetly and he's swamped with buyers. One broker recently disposed of a 125-ton ladle with scarcely any effort.

Strangler Lingers-Chief cause of the soft spot around Pittsburgh during the last several months has been the steel strike. Prolonged shutdown of the steel industry apparently created a defeatist psychology that continues to linger and is choking interest in spending.

Business and industrial leaders are still trying to evaluate the general business outlook for the remainder of the year and beyond. To many, the pattern is a hodgepodge and they are beginning to distrust prognostications of both government and private economists.

The general attitude is one of caution. Many businessmen are aware that steel consumers have been guilty of crying "wolf" regarding the state of their inventories both before and during the strike. Now they want to see for themselves just how long the strong steel market is likely to last.

Quick Million-Further indication that there's a quick buck to be made in the used machinery auction business (THE IRON AGE, Aug. 14, 1952, p. 208) is the overnight success of an enterprising young machinery auctioneer in Cleveland.

Little more than 3 months ago, 28-year-old Norman Finson's plan to go into auctioneering on his own was still in the dream stage. Now he's confidently predicting that he'll do at least \$1 million worth of business during the year.

He reports he's already received enough inquiries to keep his firm booked for a year. In addition he plans to double his 4000 sq ft of floor space.

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On His Own - Mr. Finson entered the auctioneering field after his discharge from the Army. He did allotment work until a month ago when he quit his job. After three private sales he was in business as head of his own used machinery auctioneering firm.

Featured at his first public auction sale were used machine tools, although there was also a wide variety of industrial equipment up for bidding. Included among the used tools offered for sale were two Landis grinders, 13 Acme-Gridley automatic screw machines, a Gisholt automatic lathe and a Cincinnati No. 2 milling machine.

Mr. Finson's present plan is to hold one auction every month. Since all machinery is sold from his showroom rather than from owner's plants, the time between sales will be used to get the sold machinery out and the new used equipment in.

At Sea-The New York Chapter of the Machinery Dealers National Assn. plans to salt up its first meeting of the fall season with an allday fishing trip, Sept. 27. If enough members are interested, a converted yacht will be chartered to accommodate about 20 sea-faring dealers.

Trip will start out from Sheepshead Bay at 7:30 A.M. and wind up with dinner ashore that evening for those who can still stir up enough courage to look a lobster in the eye. Members who don't wish to take the trip may just attend the dinner. Fred Hicks, Hicks Machinery Co., 110 Albany St., New Brunswick, N. J., is arranging the trip.

The New York Chapter is planning more social meetings as part of its program to promote interdealership relations.